

COMMITTEE WORKSHOP
BEFORE THE
CALIFORNIA ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

In the Matter of:)
)
Systems Integration Framework)
)
Programmable Communicating)
Thermostat (PCT))
_____)

SECRETARY OF STATE
FIRST FLOOR AUDITORIUM
1500 11TH STREET
SACRAMENTO, CALIFORNIA

THURSDAY, FEBRUARY 16, 2006

10:20 A.M.

Reported by:
Peter Petty
Contract No. 150-04-002

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

COMMISSIONERS PRESENT

Arthur Rosenfeld, Commissioner, CEC

Moises Chavez,
representing Commissioner Dian Greuneich, CPUC

STAFF and ADVISORS PRESENT

Mark Rawson

Tony Tully

Mazi Shirakh

Ron Hofmann

Mike Gravely

Karen Herter, Consultant
Advisor to Commissioner Rosenfeld
Lawrence Berkeley National Laboratory

PANELISTS

Dan O'Donnell
Honeywell

Jeff Edgar
White Rodgers

Terry Mohn
San Diego Gas and Electric Company

Tim Vahlstrom
Pacific Gas and Electric Company

Carlos Haiad
Southern California Edison Company

ALSO PRESENT

Gayatri Margaret Schilberg
JBS Energy, Inc.
representing The Utility Reform Network

ALSO PRESENT

Joseph William Hughes
Electric Power Research Institute

Erich W. Gunther
EnerNex

Michael A. Kuhlmann
Residential Control Systems, Inc.

Alex Do
University of California Berkeley

Ron Eigenbrod
LightStat

Rick Boland
e-Radio USA, Inc.

P.A. Subrahmanyam
CyberKnowledge

Ray Bell
Grid Networks

Bruce Baccei
ConSol

Jon McHugh
Heschong Mahone Group, Inc.

via teleconference

Richard Halverson
Energy Management Systems

Angela Chuang

Laura Rook
Portland General Electric

Robert Parnell
Novo2

Ralph Abbott
Plexus

ALSO PRESENT

via teleconference

Darryl Gagne
AMDS Wireless

Cal Koskovich

Craig Sherman
Sacramento Municipal Utility District

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

I N D E X

	Page
Proceedings	1
Opening Remarks	1
Mark Rawson	1
Commissioner Rosenfeld	5
Workshop Overview	1
CEC Staff Presentations	8
Title 24 Process and PCT Policy, Structure and Requirements - M. Shirakh	8
Questions/Discussion	31
Review the "What" - R. Hofmann	33
Questions/Discussion	43
Panels	54
Thermostat Manufacturers	54
D. O'Donnell, Honeywell	54
J. Edgar, White Rodgers	63
Questions/Discussion	65
Afternoon Session	101
Panels - resumed	102
California Investor-Owned Utilities	102
Joint Proposal	102
SDG&E/SCG, T. Mohn	102
SCE, C. Haiad	102
PG&E, T. Vahlstrom	102
Questions/Discussion	113

I N D E X

	Page
Facilitated Public Discussion - M. Shirakh	143
Closing Remarks	197
Adjournment	
Certificate of Reporter	

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

P R O C E E D I N G S

10:20 a.m.

MR. RAWSON: Despite our WebEx difficulties, and for the people on the phone, I'm going to give you an internet address that you can go to and you can at least download the presentations that are going to be presented this morning, that are posted thus far. And when we get a chance later with WebEx back online, we'll go ahead and maybe take a break and reconnect you that way.

My name's Mark Rawson. I'm a Program Manager in the Public Interest Energy Research program. Welcome to the third workshop we're having on PCT, or programmable communicating thermostat integration.

This is the third workshop that we've had on this particular topic. The first workshop was held about a year ago, that looked at ways to do information exchange or reference design for information exchange for PCTs.

More recently on November 29th we had a workshop to look at deployment issues from a vendor's perspective.

And today's workshop is going to

1 continue along with that theme and give
2 manufacturers an opportunity to present their
3 thoughts about PCT deployment, as well as giving
4 the California IOUs an opportunity to comment
5 about their thoughts about PCT deployment.

6 The agenda for today is going to start
7 off here with a discussion by Mazi Shirakh, who is
8 the Energy Commission's PCT Title 24 Program
9 Manager. And he's going to give a discussion
10 about how the Title 24 process works as it relates
11 to PCTs.

12 That's going to be followed by a
13 presentation by Ron Hofmann, who is a consultant
14 to the PIER program, that's been working on
15 integration issues for PCTs and broader demand
16 response issues. And Ron's going to give a
17 presentation about what it is that we're seeking
18 from, or trying to accomplish through integration
19 of PCTs into the electricity enterprise.

20 Following that we're going to have a
21 panel presentation by thermostat manufacturers.
22 We'll take a lunch break and then right after
23 lunch we're going to allow the IOUs to participate
24 in a panel to talk about their perspectives.

25 In the afternoon, following that, Mazi's

1 going to lead a facilitated discussion with
2 participants here in the auditorium, as well as
3 those on the phone, to get their specific comments
4 about this integration issue.

5 And then we'll try to wrap things up by
6 4:00.

7 A couple housekeeping things real quick.
8 We do have a court reporter today because we
9 wanted to make sure that we were able to capture
10 everybody's specific comments as we go forward
11 with the Title 24 activity.

12 So what we're asking people to do,
13 before you speak, is to state your name and your
14 affiliation.

15 We do have microphones down in front,
16 and during those parts in the agenda where you're
17 able to ask clarifying questions, or in the
18 facilitated discussion this afternoon, we'll
19 actually try to bring the microphone to you to
20 make it a little more efficient in making sure
21 that you're able to state your comments.

22 There is a sign-up sheet in the back.
23 We'd appreciate it if you would please sign up on
24 that sheet and let us know your contact
25 information in case we need to follow up with you.

1 As far as the presentations that are
2 posted thus far, for the people online, we have
3 Mazi's presentation and Ron Hofmann's presentation
4 currently posted. And we will make the thermostat
5 manufacturers and utilities presentations
6 available at the same site later today.

7 Let me give you the web address. It's
8 [www.energy.ca.gov/title24/2008standards/documents/](http://www.energy.ca.gov/title24/2008standards/documents/index/)
9 [index/](http://www.energy.ca.gov/title24/2008standards/documents/index/) -- just a little bit more -- [.html#021606](http://www.energy.ca.gov/title24/2008standards/documents/index/#021606).

10 Was there a question?

11 UNIDENTIFIED SPEAKER: Did we put
12 internet phone in here or what?

13 UNIDENTIFIED SPEAKER: Yeah, that's what
14 -- yeah.

15 MR. RAWSON: We can hear you online. We
16 don't have WebEx right now, so I'm --

17 OPERATOR: The recording has stopped.
18 The message has reached the maximum length. Thank
19 you for your message. Please enter another
20 extension number.

21 MR. RAWSON: And somebody online is
22 hooked into their voicemail, if you could correct
23 that.

24 OPERATOR: To use the dial-by-name
25 directory, press 1-1-1-1. Or to reach an operator

1 between 6:30 a.m. and 5:00 p.m., dial 3000.

2 You may now enter another extension
3 number or press zero for assistance.

4 MR. RAWSON: Can you mute that?

5 UNIDENTIFIED SPEAKER: Yeah, once I get
6 in.

7 UNIDENTIFIED SPEAKER: What was the
8 number at the end of the html again, please?

9 OPERATOR: Goodbye.

10 MR. RAWSON: The number at the end of
11 the html address is 021606.

12 So I'm going to go ahead and let
13 Commissioner Rosenfeld from the Energy Commission
14 make a few welcoming comments. And we'll see if
15 we can get WebEx back online.

16 COMMISSIONER ROSENFELD: Good morning,
17 folks. I'm Art Rosenfeld. I'm one of the five
18 Energy Commissioners who's most intimately
19 involved in this business of a) seeing that there
20 is a programmable communicating thermostat on the
21 market by the time we need it, which is in 2008.
22 And that there are tariffs around which will make
23 it important.

24 I want to welcome you on behalf of both
25 the Energy Commission, that's me, and on behalf of

1 the Public Utilities Commission. As you know,
2 this work of advanced metering infrastructure is
3 going on under a joint proceeding of the Energy
4 Commission and the Public Utilities Commission.

5 I'm the assigned Commissioner on the CEC
6 side to that proceeding. And Commissioner Dian
7 Greuneich would like to be here, but there's a
8 Public Utilities Commission business meeting going
9 on today, so she can't. And her representative is
10 Moises Chavez. Moises, are you here now?

11 MR. CHAVEZ: Yes.

12 COMMISSIONER ROSENFELD: Stand up,
13 smile. We can't see you in the silhouette, but
14 anyway, if PUC issues come up or something, Moises
15 will help us answer those questions.

16 I wanted to address for about one minute
17 the two different aspects of the agencies that are
18 involved here. On the one hand there's the Public
19 Interest Energy R&D program at the CEC. It
20 doesn't have any policy responsibilities except to
21 help solve state problems, conserve energy, follow
22 the loading order. And that's the auspices under
23 which we're working today, thanks to Mark Rawson.

24 However, once we have the hardware
25 there's still the question of tariffs and the

1 question of what do we do in the way of requiring
2 this hardware in new buildings.

3 The Energy Commission, under Title 24,
4 new buildings energy efficiency considerations,
5 has had the authority for 30 years to do anything
6 which involves conserving energy or demand
7 response in new buildings.

8 Interestingly enough, the whole idea of
9 time-of-use pricing, although everybody thinks of
10 it as a Public Utilities Commission introduction,
11 it was actually introduced way back in 1978 as a
12 demand response issue by the Energy Commission.

13 And for decades we've had the
14 requirement that there be clock thermostats in new
15 buildings, and now all over the state. The clock
16 thermostat in 2008 will succumb to the PCT, the
17 pre-programmable communicating thermostat, at
18 least where it's economically feasible, which is
19 probably, I don't know, 15 out of 16 climate
20 zones. The utilities may decide they want to put
21 it everywhere just in the interests of
22 uniformity. But, anyway, that's the
23 regulatory and policy side of this proceeding.

24 But today's emphasis, of course, will be
25 mainly on how do you get the hardware there

1 working and affordable. But, the clock that's
2 ticking is that the Energy Commission wants to put
3 PCTs into the 2008 standards. 2008 seems like a
4 long time off, but when you're doing building
5 standards you have to publish them with quite some
6 advance notice. And so we are in a hurry despite
7 the fact that it's just early winter of '06.

8 So, welcome, all; sorry Dian can't be
9 here; glad Moises is here. Mark, who follows me?

10 MR. RAWSON: Actually, I'm going to
11 follow you, Art.

12 COMMISSIONER ROSENFELD: Mark follows
13 me.

14 MR. RAWSON: Thanks, Art. Okay, next
15 we're going to have Mazi Shirakh talk to you about
16 the Title 24 process.

17 MR. SHIRAKH: Good morning. I'm Mazi
18 Shirakh; I'm a mechanical engineer in the
19 buildings and appliances office of the Energy
20 Commission. And I'm the technical lead for the
21 Title 24 building standards.

22 We've all heard about PCT as we've heard
23 about Title 24, and the question is how do the two
24 kind of join together. There's a lot of you in
25 this room that have been through the Title 24

1 process extensively. You know about it. But, for
2 others, you know, it may not be all that obvious
3 how the system works.

4 What we'd like to do today is talk about
5 the system that works anywhere in the state. It's
6 plug-and-play, and it's independent of the OEM and
7 refill channels. So, you know, anyone anywhere in
8 the state or in the country, for that matter later
9 on, should be able to put this system in their
10 homes or businesses and it should work with any
11 utility system and distribution channels. So
12 that's the vision that we're pursuing.

13 I'm going to give you a very quick
14 overview of Title 24 building standards process
15 and how it works and implemented.

16 Why do we do energy efficiency in Title
17 24? There are several reasons for it. And we've
18 listed four of them here. The first one is the
19 Energy Action Plan, the IEPR, the Energy
20 Commission's official policy for how to meet the
21 energy needs of California, electricity and
22 natural gas. And this could include both energy
23 and demand.

24 And of the highest order on that list is
25 energy efficiency. And, of course, building

1 energy efficiency standards play a major role in
2 that effort.

3 There's also three initiatives by the
4 Governor that sets very ambitious goals for energy
5 efficiency. The first one is the West Coast
6 Governors Global Warming Initiative; the Green
7 Building Initiative, that's an executive order;
8 and the Climate Action Initiative. All three
9 signed by Governor Schwarzenegger, and all three
10 rely very heavily on energy efficiency, and of
11 course, building standards plays a major role.

12 We have major collaborators in the Title
13 24 effort. The first one is the PIER, that Public
14 Interest Energy Research, that's a program within
15 the Commission that supports, among other things,
16 the Title 24. It's an R&D program. And we draw
17 heavily upon PIER for all sorts of measures that
18 ends up in the Title 24. Anything from tight
19 ducts to PCTs to windows, you know, we really rely
20 heavily on PIER.

21 And PCT is another one of those
22 functions that is using assistance from PIER
23 integrated into the Title 24.

24 We also have started probably about two
25 or three, two cycles ago the standards were the

1 major utilities in the state, PG&E, SCE and
2 Sempra, they've actually been, joined the
3 Commission in promoting or helping us with Title
4 24. And they use PGC funds to do it.

5 In fact, for the 2005 standards the
6 utilities spent more on the Title 24 than the
7 Commission did, itself. So the utilities are a
8 major partner in this process.

9 We also go through a very extensive and
10 exhaustive public process. And I'll have some
11 slides later on to talk about that.

12 This is one of my favorite slides, and I
13 borrowed this from Commissioner Rosenfeld, one of
14 his presentations. This basically tells you why
15 we go through the trouble of doing standards.

16 And there's two graphs here. The pink
17 is the total electricity used per capita; that's
18 kilowatt hours per person. That's for the entire
19 country, United States.

20 The blue is the same for California.
21 And if you notice until about late '70s the two
22 sort of tracked each other. This is about the
23 time when California introduced the first
24 appliance standards, the refrigerator standards.
25 And shortly after the first building standards.

1 And from that moment on California's per
2 capita consumption is pretty much level, even
3 though we have bigger homes, bigger tvs, more
4 computers and all that. So, you know, that's
5 pretty revealing.

6 Now, the fact of the matter is that the
7 U.S. graph would have been much steeper because
8 the U.S. average not only includes California, but
9 it also includes other states who, shortly after
10 California, adopted similar building standards.
11 The more revealing graph would be to compare what
12 is going on in California versus those states who
13 do not enforce the energy standards, and that's
14 what this graph represents.

15 These are the states that do not
16 vigorously enforce building standards. And as you
17 can tell, it's around 14,000, whereas California
18 down here is about 7000. So it's about half as
19 much.

20 UNIDENTIFIED SPEAKER: -- speakerphone.

21 MR. SHIRAKH: I'm sorry, there's an --
22 we can hear conversations on the phone.

23 So, anyway, we're about half of what we
24 would have been without the standards.

25 And the blue is the states that do

1 enforce standards; and the gray is the U.S. And
2 the difference is fairly dramatic.

3 The first building standards were
4 adopted in '78 and they've been updated roughly
5 every three to four years. More recently they've
6 been adopted in '92, '98, 2001 and 2005. The next
7 update is scheduled for 2008.

8 In the beginning of each cycle the
9 staff, our consultants and the utilities, you
10 know, we all work together to write the proposals
11 for the new standards. And, you know, we go
12 through a lot of meetings and workshops and
13 conference calls, it goes on for months and years.

14 The updates are then presented to the
15 public in a series of workshops. And then we
16 listen to the public and the comments that we get.
17 We get literally thousands of comments and we have
18 to process -- if I may ask, if you can, put your
19 cellphones on mute or vibrate. I'd really
20 appreciate it.

21 And we have to process and respond to
22 all these comments in a formal way.

23 The public provides input. It's a very
24 broad segment. It includes designers of HVAC
25 system, the lighting system, architects, energy

1 consultants, builders, the utilities, equipment
2 manufacturers are heavily involved in this
3 process, lighting manufacturers, HVAC, windows.

4 Building officials are very important
5 and relevant. It's ultimately building officials
6 who enforce Title 24. So, we listen to them very
7 carefully. We also have organizations that
8 represents the environmentalists. We have
9 scientists and engineers, independent or
10 affiliated with national labs, and others.

11 We work in the Commission with energy
12 policies, energy policy committees. And the Title
13 24 is under the Efficiency Committee. And we have
14 two Commissioners, Art Rosenfeld and Jackie
15 Pfannenstiel; and they provide the overall policy
16 guidelines. And, in fact, the PCT and the tier
17 two standards, which I'll mention briefly -- those
18 are some of the policy issues that were decided by
19 the Policy Committee.

20 All the measures that end up in the
21 standards are adopted. They have to go through
22 what we call a lifecycle costing analysis, and
23 they must be demonstrated that they are cost
24 effective. And that's true for all the mandatory
25 measures or prescriptive measures that end up in

1 the standards.

2 For the 2005 standards we held 19 public
3 workshops and hearings. And it was attended by
4 hundreds. The 2005 standards were adopted by the
5 Commission on November 3, -- on the November of
6 2003, and subsequently by the Building Standards
7 Commission in April of 2004. They went into
8 effect October 1 of last year.

9 The standards, the document that comes
10 out of this process is a very legalistic, plain,
11 if you will, boring document. And sometimes hard
12 to comprehend. So in an effort to help the
13 community to understand that, we come up with all
14 sorts of alternative documents which are
15 interpretations of the standards, but they're more
16 user friendly.

17 Two of them are the residential and
18 nonresidential compliance manuals. And all of
19 these documents are on the internet. You can
20 access it through the website that Mark gave you,
21 the address.

22 Or you can access them an easier way,
23 would be go to the main page of the Energy
24 Commission; on the right there's a link to Title
25 24 standards. If you click on that then it will

1 take you to everything you want to know about the
2 2005 standards, 2008 standards, all the workshops
3 and all the documents, everything's in there.

4 We also have an energy hotline; it's a
5 toll free number for anyone who has questions
6 about Title 24 compliance, clarifications. And
7 the number is given here.

8 And the utilities have been providing
9 invaluable help with training. And they've been
10 holding classes throughout the state, Bay Area,
11 southern California, here in Sacramento, in the
12 foothills. And they've been promoting, and
13 educating people on Title 24.

14 We have another document, it's called
15 the Blueprint Newsletter. And that goes out every
16 quarterly and that kind of deals with the latest
17 issues that confronts, or the questions that come
18 up.

19 We also have a hole bunch of training
20 videos. And these are very popular. We get a lot
21 of hits on our internet site. And it tells you
22 the videos are usually about three to four or five
23 minutes long and they talk about specific topics,
24 you know, how to do a certain measure. How to do
25 tight ducts, for instance; what you look for, and

1 what is the compliance procedure, what type of
2 documentation you need.

3 The standards, as I mentioned earlier,
4 they're enforced by local building officials.
5 They walk through the building; they look at the
6 plans; they have the compliance documentation, you
7 know, the energy compliance reports. And they
8 determine in the end whether the building is in
9 compliance or not. If they have questions they
10 call us and we provide guidance.

11 Sometimes, you know, we rely on third-
12 party verifications for certain, more complicated
13 measures, this like Titax or TXVs thermostatic
14 expansion valves. These folks are called HERS
15 raters. And they're the people who will go and
16 verify that certain measures have actually been
17 installed before a permit can be granted.

18 To comply with the Title 24 there are
19 three types of measures that must be complied
20 with. The first one I'll call the mandatory
21 measures; second one is the prescriptive measures;
22 and the third one prescriptive or performance; and
23 the last one are the compliance options.

24 The mandatory measures are those
25 measures that has to be met regardless of what

1 climate zone you're in, or what type of compliance
2 approach you're using. These could be minimum
3 insulation requirements in the walls and the
4 ceilings; it could be minimum efficiency for HVAC
5 equipment; it could be controls for lighting, you
6 know, if you noticed that there's like bilevel
7 switching requirements everywhere in the state.
8 And those are the mandatory requirements that has
9 to be met regardless of compliance path.

10 The prescriptive compliance is basically
11 a laundry list of specific measures that you have
12 to go through, you know. You have to have this
13 much insulation in the walls; your windows have to
14 meet certain performances; the HVAC has to meet
15 certain minimum. And you go through this laundry
16 list, and these lists varies depending on the
17 climate zone.

18 And you all know that we have 16 climate
19 zones in the state. So, for instance, climate
20 zone 1 up near the north coast just below Oregon
21 does not have much cooling. So you can imagine
22 that the requirements there would be very
23 different than climate zone 14 which is the
24 desert, or climate zone 12 which is Sacramento, or
25 11 is Fresno. So they all have different

1 requirements. And as long as you meet that
2 laundry list of measures for that specific climate
3 zone, then you're in compliance.

4 The prescriptive compliance does not
5 allow tradeoffs. You know, if you want more
6 windows, for instance, you cannot trade that off
7 in a more efficient measure someplace else in the
8 building. That's why we have the performance
9 method, which is the next on the list.

10 The performance method is a computer
11 program or more, there are actually several of
12 them. Certified by the Commission. And you can
13 use those to demonstrate compliance for the
14 building.

15 And the neat thing about performance
16 approach is that you can do tradeoffs. If you
17 want more windows, you want more lighting, you
18 know, any of that, you can do it, but you have to
19 make it up someplace else in the building. You
20 can put in a more efficient air conditioning
21 system, or you can put more windows by putting
22 more efficient windows. And the performance
23 approach allows you to do all that.

24 We also have a number of compliance
25 options. And what compliance options are also

1 known as comp-ops. These are measures that are
2 not required by the standards, they're not in the
3 basic budget of the standards. But if you do put
4 them in you get credit, compliance credit for
5 them.

6 Examples are high EER air conditioning.
7 Again, you know, if you want more windows or if
8 you want more lighting, you can do all that. But
9 you can put a more efficient high EER air
10 conditioning and you get a certain compliance
11 credit for that.

12 Another example is gas cooling. You get
13 a compliance credit for that. And there's
14 actually many many more; I didn't list them all
15 here.

16 The Title 24, the 2005 version, has some
17 major revisions to the code. And I have a few of
18 them here listed, the more significant ones. The
19 first one was going to the time-dependent
20 valuation. Before 2005 we were using source
21 energy to evaluate the relative cost effectiveness
22 of different measures.

23 Now, source energy treated energy the
24 same regardless of when it was used, the time of
25 the year or the time of the day. Worked fine, but

1 in a state where we have problems with peak
2 energy, source energy wasn't necessarily the best
3 index.

4 So we went to TDV. And what TDV does,
5 in short, you know, it differentiates between the
6 value of energy based on when it's used, if it's
7 summer or winter, or the time of the day. So it
8 gives you more accurate reflection of what the
9 worth of the value of energy is for the time of
10 the day.

11 And you can imagine a hot August
12 afternoon at 2:00, 3:00, the energy, unit of
13 energy, kilowatt hour, is worth a lot more than
14 offpeak or winter. So measures that save energy
15 during those peak periods will actually be more
16 favorable.

17 Some of these other, I'm going to go
18 quickly through this. I'm not going to read
19 through them. We did a lot of changes to
20 residential lighting. And prior to 2001 we had
21 very minimum requirements for lights in homes. In
22 2005 we introduced new measures, encourages either
23 high efficacy lighting or certain controls,
24 manual on, occupant sensors or dimmers.

25 We increased the level of duct

1 insulation in residences. And it used to be R4.2,
2 now it ranges from 4.2 to R8, depending on the
3 climate zone. I think in Sacramento here, for
4 instance, it's R6, where it used to be R4.2.

5 Now we got insulation for pipe
6 insulation; some of the hot water pipes in the
7 home that must be insulated.

8 For replacement windows, now they all
9 have to meet the prescriptive requirements of the
10 standards. If you're replacing your windows, the
11 entire glazing unit, then, you know, you're
12 covered by the standards.

13 We put a limit on how much -- there
14 always was a limit on fenestration that could go
15 into a home. It used to be 16 percent for some of
16 the climate zones, and 20 in others. We made it
17 basically 20 percent for all climate zones. So we
18 actually relaxed it a little bit.

19 But then there's a new requirement that
20 only 5 percent of the glass could face west. And
21 the reason for that is that's what drives the peak
22 demand in the summer afternoons. I mean you can
23 see the trend here that, you know, we are really
24 concerned about peak demand. And PCT actually is
25 a piece that plugs into this puzzle.

1 It doesn't mean you can't have more than
2 5 percent on the west. What it means, if you do,
3 then you have to go back to that performance
4 method that I described, and try to make up for
5 the difference someplace else in the house.

6 One of the biggest, and for me -- to me,
7 is one of the best changes in Title 24 is the
8 requirement for duct sealing. And I can tell you
9 from my personal experience I tested my ducts; had
10 a 44 percent leakage. And I changed my --

11 UNIDENTIFIED SPEAKER: (inaudible)
12 percent --

13 MR. SHIRAKH: 44 percent. And I changed
14 it back in October, great timing. And now it's
15 down to 6 percent. And the savings on my bill so
16 far has been phenomenal.

17 And so all new homes will have to -- but
18 they don't have to, again this is a prescriptive
19 measure, but, you know, it's wise to do duct
20 sealing. But if you don't do it, then you have to
21 put in some very expensive, high efficiency
22 equipment in there to make up for it. In most
23 cases you'll find that duct sealing is actually
24 the better choice.

25 And in some cases, retrofits, and if

1 you're doing remodeling or changing your duct,
2 your air conditioning system in existing homes,
3 you also have to seal your ducts. And that --

4 UNIDENTIFIED SPEAKER: And they have to
5 test it to make sure --

6 MR. SHIRAKH: Yes. They have to be
7 tested. They have to be HERS-verified. And then
8 you get a permit for it.

9 And we also provided some compliance
10 credits for high EER gas cooling, high quality
11 insulation installation, and some other measures.

12 There's also, for nonresidential there's
13 a prescriptive requirement for cool roofs. Again,
14 cool roof is one of those things that impacts peak
15 demand. And, you know, when you talk about peak
16 demand, we listen.

17 We introduced acceptance requirements
18 for the first time in 2005. Acceptance
19 requirements are soft of the commissioning of
20 certain features. You know, you can have all
21 sorts of fancy systems in a building, but they're
22 not going to save you any energy if they don't
23 work right.

24 You could have an economizer that could
25 have cost thousands of dollars, but if it's stuck

1 in the open position, it's not only going to not
2 save energy it's actually going to waste energy.

3 So what acceptance requirements do is
4 they make sure that somebody else will go through
5 the building and make sure that, you know, these
6 systems actually do perform the way intended. And
7 they're mostly for mechanical equipment; and we do
8 have some acceptance requirements for lighting
9 controls.

10 We have new requirements for demand
11 control, ventilation, the CO2 sensors for certain
12 occupancies. The T-bar ceilings, you know, if you
13 put any of the drop ceilings, you can no longer
14 put the insulation on top of the T-bar ceilings.
15 They're very unreliable; they get moved around,
16 you know; they have lighting fixtures in it. And
17 so the ceiling, the insulation has to be at the
18 ceiling level, not at the T-bar ceiling.

19 Relocatable public school buildings have
20 their own standards. Duct efficiency
21 requirements, the insulation went up to R-8 in
22 most cases for nonres, where it was R-6 before.
23 We tightened down the lighting power densities for
24 indoor lighting.

25 We have new skylight requirements in

1 large buildings. This would be mostly like your
2 big box buildings, Home Depots, CostCos, you know,
3 pretty much all new big box stores, any building
4 that's larger than 25,000 square feet with a
5 ceiling height of over 15 foot, they have to have
6 skylights and controls to dim or turn off the
7 lights. And significant energy savings.

8 And there was other improvements. The
9 thermal breaks for metal building roofs. Metal
10 buildings are becoming more common. And as you
11 can imagine, the metal components conduct heat a
12 lot more efficiently than wood or lumber, so
13 there's some new requirements for that. And
14 there's been other requirements, improvements.

15 Unconditioned buildings were exempt
16 prior to 2005 at all, for all Title 24
17 requirements. Now all unconditioned buildings
18 must meet the lighting requirements.

19 Now, the current event, the 2008
20 workshops have already begun. We already had a
21 two-day workshop that was held in October. We're
22 going to have another two-day workshop next week,
23 the 22nd and 23rd. And the agenda for this is up
24 on our website. PCT will be discussed on the
25 morning of the 23rd. So, for those of you who are

1 interested, you can either phone in and listen or
2 you can attend in person. The workshops are going
3 to be in the hearing room A of the Energy
4 Commission.

5 We'll have future workshops that will be
6 held in March of this year. And they'll be
7 followed by adoption hearings. Adoption hearings
8 are those hearings where the two Commissioners
9 will actually listen to comments from the public.

10 Some of the changes we're considering
11 for 2008, demand response measures. That includes
12 the topic at hand today, the PCTs. Another one is
13 called the global temperature adjustment. This is
14 the PCT equivalent for large, built-up, nonres
15 systems that are controlled by energy management
16 systems.

17 And there's a proposal by scientists at
18 Lawrence Berkeley Labs to deal with that. And
19 that topic will also be presented next week on
20 Thursday, the 23rd.

21 Tier two standards for residences with
22 PVs, this is -- you probably heard a lot about the
23 Governor's initiative for photovoltaics on homes.
24 And there's always been a desire to integrate that
25 into the Title 24; and the tier two standards are

1 an attempt. And, again, this is one of those
2 things that deals with peak energy.

3 And what the idea of tier two is that
4 you will make the building as efficient as
5 possible, and then you put PVs on top of that.
6 And the reason is that in most cases energy
7 efficiency is cheaper than PV. So you want to
8 make it as efficient as possible to reduce the
9 need for the amount of PVs. Instead of a 3 kW
10 system PV, then you could perhaps go down to 1.5.

11 We're also working a bunch of modeling
12 problems in attics and roofs. We're enhancing the
13 ventilation requirements and indoor air quality,
14 investigating indoor air quality requirements for
15 residential standards.

16 We're going to be looking for the first
17 time for standards for hospitals, in cooperation
18 with OSHPD. We've been talking to those folks.
19 There's going to be a bunch of refinement to
20 different things we did in 2005 Title 24,
21 including refinements to res lighting, indoor
22 lighting, acceptance requirements. One of the
23 bigger changes are going to be here to the nonres
24 site built fenestration has been a big problem for
25 us.

1 Residential windows, we're going to be
2 looking at that in an attempt to make them a
3 little bit more efficient. The requirement in the
4 Title 24 is fairly relaxed compared to what's
5 available on the market.

6 Nonresidential insulation levels will be
7 looked at. And we're going to be having some
8 discussions about additions and alterations. And
9 expanding DDC system, that's the energy management
10 system for nonres buildings. We'll also be
11 looking at some additional compliance options for
12 the 2008 standards.

13 The PCT language that hopefully will
14 come out of this attempt today and future events
15 will be included in the mandatory measure sections
16 of the residential and nonresidential buildings.
17 So, again, mandatory measures are those measures
18 that you have to do regardless of the compliance
19 path or whatever else you're doing in the
20 building. So any building that has an HVAC system
21 will have to comply with these mandatory measures.

22 Our current vision is that they'll cover
23 residential split systems, packaged unit heat
24 pumps, as well as all nonresidential unitary
25 systems that are currently controlled by a

1 programmable thermostat basically.

2 It will not cover utility buildup
3 systems, VAVs, variable air volumes, multi-zones,
4 or systems that are controlled by energy
5 management control systems. Again, this system
6 are going to be covered under that separate
7 proposal that LBNL is working on.

8 The tentative schedule for 2008, the
9 public workshops are October of 2005, which
10 already started, through May of 2006. From July
11 of 2006 to November of 2006 will be public
12 workshops on markup of the standards.

13 Basically when we get all these comments
14 back from the public through our public workshops,
15 then we're going to go back to the standards and
16 start marking it up. We'll present those in
17 future workshops for further comments and
18 refinements.

19 From December of 2006 to May of 2007 is
20 the formal rulemaking and adoption, where you
21 actually get to comment and argue your case before
22 the Commissioners.

23 And then we'll have to develop other
24 tools that go with the Title 24; and these are
25 revisions to the ACM manuals, to our compliance

1 software, and the residential and nonresidential
2 compliance manuals.

3 And the effective date of the 2008
4 standards is currently targeted for November 1,
5 2008.

6 With that, any questions? Could you
7 come up to one of the mikes?

8 MS. SCHILBERG: My name is Gayatri
9 Schilberg. I'm with JBS Energy representing TURN.
10 And my question is at what point in the timeline
11 is the cost effectiveness exercise undertaken?

12 MR. SHIRAKH: When we go through the
13 adoption hearings, before we go to the adoption
14 hearings. We're going through the public
15 workshops right now. And then we're going through
16 the markup of the standards, which is the next
17 phase. By then everything that will end up in the
18 markup will have cost effectiveness done.

19 So if you have any concerns about any of
20 the measures or the cost effectiveness, for
21 instance in the workshops that we'll have next
22 week, for all the measures that we are presenting
23 we're also discussing the cost effectiveness,
24 based on what we know about the measure at the
25 time.

1 And so if you have any concerns you can
2 actually come to our workshop next week or in
3 March and May and raise your issues or concerns.

4 It's an ongoing process; there is not
5 one point in the process where we say, okay, this
6 week we're going to do cost effectiveness. As the
7 measures are proposed by the proponents or our
8 consultants or the utilities, we're all required
9 to do --

10 OPERATOR: -- you may enter it at
11 anytime. For the company directory, enter 7. For
12 the operator, enter zero. Thank you.

13 MR. SHIRAKH: So, anybody who's --

14 OPERATOR: -- advanced metering data
15 systems. If you know your party's extension, you
16 may enter it at anytime. For the company
17 directory, enter 7.

18 UNIDENTIFIED SPEAKER: There you go.

19 MR. SHIRAKH: So, anybody who proposes a
20 measure will have to do the cost effectiveness
21 when they present it at the public workshop. As
22 the measure changes, then that information will
23 have to be updated.

24 Any other questions or comments? Thank
25 you.

1 MR. TULLY: I'm sorry for the technical
2 difficulties; we were taken off the internet
3 shortly and somebody else gained control of the
4 meeting. So, we've been trying to gain control
5 this whole time. And I believe that was Robert.
6 And he was trying to help us along there. So I
7 just want to make sure that we have control of
8 this again, so I'm going to --

9 (Pause.)

10 MR. RAWSON: Well, why don't we go ahead
11 and take a five- or ten-minute break and we'll
12 reconvene at 15 after with Ron Hofmann's
13 presentation.

14 MR. TULLY: And I'm going to ask the
15 callers online -- everybody on line, if you could
16 please, we're going to re-enter the meeting. So,
17 I'm going to leave the meeting; I'm going to re-
18 enter it and gain control of the meeting. And we
19 should be back to normal.

20 (Brief recess.)

21 MR. HOFMANN: As Commissioner Rosenfeld
22 mentioned in his opening remarks, this is the
23 third in a series of system integration workshops
24 sponsored by PIER. PIER stands for Public
25 Interest Energy Research. And the PIER

1 organization or the PIER project under the CEC is
2 intended to support and to conform regulatory
3 policy.

4 And so today in the few slides that I'll
5 be presenting over the next ten minutes, I'm first
6 going to be talking about some efforts that PIER
7 has had underway to support regulatory policy.
8 And then at the end I'll talk a little bit about
9 some projects that PIER has underway that are
10 intended to help inform policy.

11 So, in this particular workshop --

12 (Pause.).

13 MR. HOFMANN: Oh, anywhere on the
14 PowerPoint. Okay. No, still not doing it. Okay,
15 thanks.

16 Okay, so today I'd like to review a
17 little bit of what went on in the last workshop,
18 the second of the series of three. And again to
19 tell you that what we're focused on is supporting
20 the Title 24 proceedings. And specifically, we
21 are looking at issues with respect to system
22 integration of PCTs throughout the state.

23 I used a little bit of the acronyms here
24 just to be able to fit this onto one slide, but
25 I'll say all the words, so we can be sure that

1 we're clear about them.

2 This particular slide is a repeat of one
3 of the slides that existed in workshop number two.
4 And it states the reasons for the system
5 integration interface specifications. So we're
6 not focused on specific thermostat specifications
7 as much as what the interfaces might be so that
8 those thermostats, those PCTs, programmable
9 communicating thermostats, what they need to be
10 able to work and be operable or interoperable
11 within a greater system.

12 So the four major bullets on this slide
13 are focused in on what I call the WHAT, the
14 reasons for the system integration interface
15 specifications.

16 One of the WHATs that comes from the
17 policy is that there should be one PCT system
18 integratable interface for all of California. And
19 if it could be for the whole United States, that
20 would be wonderful. This would make it easier for
21 manufacturers to sell one product throughout the
22 United States and not have to have specific
23 products for each utility. That's the goal of
24 that.

25 The sense is that it would be a retail

1 purchase by homeowners at places like Home Depot
2 and like stores. And this would be a consumer-
3 installed, consumer-owned, consumer-maintained
4 product.

5 So, again, one programmable
6 communicating thermostat system integratable
7 interface for all devices.

8 Now, this does not mean that thermostats
9 have to be the same. Thermostats can
10 differentiate themselves with features, price, a
11 lot of different things. It's just that these
12 interfaces would have to be the same so that all
13 of these PCTs could all operate in California.

14 With the PCTs what would be hoped is if
15 there's some common signaling infrastructure
16 throughout California. Not saying it's one-way,
17 not saying it's two-way, not saying it's ten-way,
18 we're just simply saying that it would be nice to
19 be able to have an infrastructure that can be
20 shared between the California-ISO, the utilities,
21 which actually send the signal out. And that
22 these signals could be surgically sent in such a
23 way, meaning that they might be addressable, so
24 that messages are just picked up by those PCTs on
25 those feeders that need to hear them. Maybe

1 everybody hears them, and maybe only certain
2 respond because of addressing issues. These are
3 issues that need to be worked out in these
4 specifications.

5 Number three, that it works with any AMI
6 architecture. AMI stands for advanced metering
7 infrastructure. So some of the utilities, at
8 least at the moment, appear to be looking towards
9 AMI that is stand-alone from their PCT system, or
10 from the load control system. I don't know if
11 that's the way it's going to come out, but if that
12 was the case, at least in that case the signals
13 would have to be synched through some sort of a
14 timing signal that would keep both the load side
15 and the metering side in synch.

16 Other utilities in the state are looking
17 at integrating physically both systems. Either
18 one of those would work with the specification
19 that the signals be in some way synched with the
20 AMI readings.

21 The fourth spec or generalized spec
22 would be that this should be compatible with
23 legacy technologies. As most of you know, the
24 thermostat industry is rich with capabilities of
25 existing products. And one would hope that in the

1 development of the PCT for the state that those
2 features and capabilities would not be lost. That
3 they would be, in fact, still part of the
4 thermostat industry and be simply just enabled in
5 different ways through these interfaces that we're
6 talking about.

7 Well, every time I touch it, Tony, it
8 doesn't want to go.

9 (Pause.)

10 MR. HOFMANN: Hit the spacebar? Thank
11 you. That's the one thing I didn't try.

12 So, why are we here today? Well, at the
13 last workshop in order to get people thinking
14 about these things we presented a strawman. The
15 strawman was not meant to be a regulatory spec.
16 It was meant to get people thinking about what we
17 were talking about.

18 So we created a paradigm in which to
19 think about it. And then we gave some examples of
20 how that paradigm might be used. With the whole
21 idea that the vendor community and the IOUs would
22 think about these things and come back with new
23 better ideas, or confirm one of those ideas if
24 they liked them, or at least come back with a
25 system integratable concept.

1 And the strawman concept that we had in
2 the last workshop, which you'll notice that I have
3 the words R&D on there, this was mainly just ideas
4 -- they aren't products yet -- was that there
5 might be some sort of a common signaling
6 technology. Maybe a one-way signaling technology
7 that could underlie any other two-way system,
8 which would have some sort of broadcast packets
9 that would have enough information to discriminate
10 between both economic and/or emergency signals.

11 Another concept or area of interfacing
12 that we thought was important to be considered was
13 that of potentially changing the way HVAC systems
14 are connected to thermostats today; it's by
15 terminal strips. Would there be a way to
16 interface those terminal strips such that there
17 could be what Joe Hughes calls plug-in work,
18 rather than plug-and-play.

19 And so that would mean that the
20 thermostat industry, instead of thinking about
21 wiring something in for 30 years, might actually
22 begin to have an industry in which if consumers
23 wanted to upgrade their thermostat, it would be an
24 easy way to do it, because they could essentially
25 plug into a connector that would allow them to go

1 down and buy different thermostats from Home
2 Depot, as their desires changed, as the
3 environment changed, and actually have different
4 thermostats. You know, this is something we
5 wanted industry and the utilities to think about.

6 We also took a page from the pc industry
7 and we said, what about if PCTs had expansion
8 ports of some sort, would that be something that
9 the industry and the utilities might find
10 interesting in much the same way that the RS-232
11 plug was an expansion port for over 25 years in
12 the pc industry.

13 And those of you that were around during
14 that evolutionary period, as I was, knows that
15 things like communications and other things that
16 we take for granted being inside our pc started
17 off as being an external device coming in through
18 the expansion port. And as it became validated
19 and cost effective and useful for both consumers
20 and society, those things became incorporated into
21 the mother boards or other parts of the computers.
22 It's an idea. It's an idea.

23 And finally, there's something different
24 about PCTs as with respect to Title 24 that has
25 never happened before, which is most of the Title

1 24 regulatory language in the past has dealt with
2 stand-alone devices. And this is a system
3 integratable device. This one depends upon things
4 happening that are dynamic.

5 And so one of the issues that we thought
6 was important for people to think about was is
7 there additional human information that has to do
8 with the dynamic nature of a PCT.

9 But then at the end of the last workshop
10 we were very careful to say that in terms of the
11 Title 24 standards industry would work it out with
12 the CEC. And industry was to include the
13 utilities, the vendors and everybody else that was
14 in this process.

15 So, those two vugraphs that I just
16 showed, those two slides are really the basis on
17 which we're having this workshop today in that
18 we're looking today to get the views of vendors
19 and the IOUs with respect to these interfaces.

20 But just for a moment I want to tell you
21 one other thing that the PIER program is doing,
22 instead of supporting the Title 24 process, it's
23 trying to inform policy. And what we're trying to
24 do at the University of California right now with
25 an R&D project, is build a test bed in which we

1 can look at these three categories of interfaces,
2 communication, human/machine interface, HVAC and
3 expansion.

4 And in that regard a test bed is being
5 built which we hope to be able to report on by the
6 end of March in which we're looking at some ideas
7 to try to see what kinds of cost effective ideas
8 might be offered up to the community to consider.

9 This test bed is really quite general
10 and we'll be able to look at other ideas that
11 we're looking at right now. But right now we're
12 looking at, on the communications side we're
13 looking at a one-way broadcast signal that is in a
14 frequency domain, that would not in any way ever
15 inhibit people going to two-way or other
16 technologies in the future. It's part of the
17 standard AM/FM broadcast network. And it's a side
18 channel, a sub-channel data communication packet
19 that might be sent out every hour that could
20 inform people about prices or emergencies or
21 whatever. So we're looking at that.

22 That kind of technology is finding its
23 way into the automobile industry right now as
24 messages in your car about the music you're
25 listening to or other things about your car. It's

1 a technology where the receiver is on the order of
2 about \$3 in volume. So it meets our R&D
3 objectives of trying to find a low-cost ubiquitous
4 way of getting signals out.

5 We're also looking at all three other
6 interfaces. And there will be some reporting on
7 this in late March with respect to what kinds of
8 connectors might be used generically for HVAC
9 equipment. We haven't made any decisions about
10 that yet. We're looking at USB and other
11 interfaces for expansion ports. And we're also
12 looking at the issues about having override
13 buttons and information with respect to dynamic
14 data.

15 So, at this point, if there are any
16 questions I'd be happy to answer those questions
17 at this point. Clarifying questions. And if
18 there are none, then we will ask our two panel
19 members from the vendors of Honeywell and White
20 Rodgers to come up to the podium.

21 MR. TULLY: We have one question which
22 we'll need to repeat. Why would these signals be
23 only directed to specific target devices,
24 thermostats AMI, instead of any product able to
25 receive and respond?

1 MR. HOFMANN: A question has come across
2 the web asking about why these signals would be
3 restricted to PCTs only. And the answer is the
4 intention would be that they not be restricted to
5 PCTs.

6 We're focused on PCTs here. There's
7 lots of different architectures that might develop
8 as to how signals are sent to load devices. One
9 might be the broadcast idea that we're looking at
10 where any device that has his receiver in it could
11 hear it and take action, could be a smart device,
12 could be a pool pump, could be a PCT, could be a
13 lot of different devices.

14 It's also possible that this signal
15 could be on an AMI channel, and the channel then
16 forwards it, once it's in the premise, to some
17 type of a load device.

18 Specifically we're looking at the one-
19 way signal as maybe being the basic signal for the
20 state; and then other devices, other routers could
21 pick it up and forward it on to aggregators who
22 may be part of ISO or other programs, and may be
23 able to use this signal to be able to reduce load
24 as part of an aggregation program.

25 It might be in some utility's best

1 interest to capture the signal and resend it as
2 part of a two-way network that they're setting up
3 for their AMI.

4 There's a lot of different ways to do
5 this physically. The signal is not meant to be
6 restrictive, but to be informative about the needs
7 of the ISO and the IOUs.

8 MR. TULLY: And, also, if you could ask
9 the callers if there are any people on the phone
10 that would have any questions. My mike's out.

11 MR. HOFMANN: Are there any people on
12 the phone lines that would have any questions that
13 would like to ask them at this point? Do you have
14 it muted, Tony?

15 MR. TULLY: It's un-muted now.

16 MR. HOFMANN: It's un-muted. Does
17 anybody have any questions? We have one question
18 from the audience.

19 MR. EDGAR: You mentioned there's an
20 AM/FM communications medium that you're
21 considering in this concept. Is that something in
22 use today like a spot-type technology, or is this
23 only for this purpose?

24 MR. HOFMANN: No. The answer is the
25 technology we're looking at is called RDS. And

1 it's not just for this. It's a spot-type
2 technology; it's something that's out there. It's
3 not specifically technologically like spot. But
4 it's being used by automobile manufacturers today.
5 They're putting the RDS chip into cars and that's
6 how you're finding out what the music is that
7 you're listening to. You get a message on some
8 cars. Some people -- there was somebody here that
9 was telling me, I think Mike Graveley was telling
10 me he has it in his car.

11 So if you have a radio station that has
12 enabled the RDS technology, then that particular
13 radio station could show you on a little LCD
14 display in your car what you're listening to. It
15 could put the text.

16 This kind of technology exists in
17 Europe. I think it's called RBDS. And these
18 chips are made in large volume by National
19 Semiconductor and other people. And that's the
20 kind of thing we're looking at.

21 We're not limited to that. We would
22 hope that this technology not be specific to
23 California, and not be specific to the power
24 industry.

25 MR. EDGAR: I was asked to state my name

1 and affiliation. Jeff Edgar with White Rodgers.

2 MR. HOFMANN: Are there any other
3 questions?

4 MR. TULLY: Are there any questions for
5 those on the phone line? I guess not.

6 MR. HOFMANN: Okay, so I guess I'd like
7 to pass -- oh, sorry, sorry.

8 MR. HUGHES: Hi, Joe Hughes, EPRI. Ron,
9 I was going to ask, the utilities are doing a lot
10 of good work in developing requirements for these
11 future systems. Even for the R&D work here that's
12 planned, is there a plan to make use of the work
13 from utilities in developing -- and for the
14 requirements that are being developed for these
15 future systems?

16 MR. HOFMANN: The answer is yes, but let
17 me answer it with a little bit more detail. The
18 PIER work in this particular mode is trying to
19 inform policy, and is not trying to get at the
20 final answer.

21 The hope is here, if you go -- I don't
22 know how to go backwards on my slides, this thing
23 doesn't seem to work, but the hope is that
24 industry will work out the specific details.

25 So the stuff that's being worked out at

1 the IOUs, the work that's being done in the
2 various vendors' R&D labs, I think that's what's
3 going to find its way into the specifications.
4 Because that's what can be done in the way of
5 products.

6 This particular test bed will try to
7 take advantage of anything the utilities are
8 doing, but it won't be specific to creating
9 products.

10 Does that help answer that question,
11 Joe?

12 MR. HUGHES: Somewhat. I shouldn't have
13 sat down.

14 MR. TULLY: Yes, it's not been good
15 today. Go ahead and read it, Ron can just repeat
16 the question if that's okay.

17 MR. HUGHES: Yeah, I think it does, to
18 the extent that I would include utilities in that
19 group that you just mentioned where the utilities
20 are developing, themselves, requirements for how
21 the system should operate, as well. I'd include
22 them in with that other group, the vendors and
23 others. So that was my addition.

24 MR. HOFMANN: Yeah, I think I mentioned
25 the IOUs and I am aware of the work that's going

1 on in terms of use cases that are being developed
2 and requirements. And I would imagine that that
3 will help drive this process.

4 Anybody else?

5 Okay, I'd like to invite our two vendor
6 panelists up to the podium. And I will introduce
7 them.

8 UNIDENTIFIED SPEAKER: Hello.

9 MR. TULLY: Oh, sorry, go ahead on the
10 phone.

11 MR. HOFMANN: Go ahead, if there's
12 somebody on the phone, go ahead.

13 MR. HALVERSON: Yeah. What kind of
14 price range are we looking at on this interface?

15 MR. HOFMANN: I'm sorry, I didn't get
16 that. What price?

17 MR. HALVERSON: What kind of price range
18 do you think it's going to be for this kind of an
19 interface with all this data and so forth?

20 MR. HOFMANN: Well, at the last workshop
21 we had hoped that the interface devices, modules,
22 whatever, would be less than \$10 total. At the
23 moment we can say for the communication interface
24 that we're looking at right now, you can go on the
25 web and figure this out for yourself, but an RDS

1 module is about \$3 in volume. USB ports, both
2 logic and connector are about \$3 in volume.

3 MR. HALVERSON: I'm talking about the
4 total service, everything that you're talking
5 about here, looking at the thermostat and HVAC
6 interface and so forth. I'm not talking about
7 pieces. What kind of price range when it's all
8 put together do you think this is going to be in?

9 MR. HOFMANN: Well, I think that depends
10 to a certain degree on what kind of a thermostat.
11 If you say what's the lowest end thermostat that
12 might be capable under this interface scenario --

13 MR. HALVERSON: Well, let's just take a
14 Honeywell or a White Rodgers thermostat, you know,
15 and then we're going to all this interface on it,
16 what are we looking at for price?

17 MR. HOFMANN: I'll let them, during the
18 panel, if they want to answer that, I'll let them
19 answer that. I can tell you that the University
20 of California people are putting together a
21 spreadsheet of built materials on these interfaces
22 and on a minimum PCT. And that will be published
23 towards the end of March.

24 MR. HALVERSON: At the end of March that
25 will be published?

1 MR. HOFMANN: Sorry? I didn't hear you.

2 MR. HALVERSON: At the end of March that
3 will be published?

4 MR. HOFMANN: Yes. The design and the -
5 - the reference design, the block design, we're
6 not making a product out of this, but we're trying
7 to figure out what the cost of these interfaced
8 elements might be.

9 MR. HALVERSON: Oh, okay.

10 MR. HOFMANN: We'll publish a
11 spreadsheet that will show both volume and device.
12 And we may even have multiple devices in some of
13 these interface categories. We don't know yet.

14 MR. HALVERSON: Okay, thank you.

15 MR. HOFMANN: And who was that that was
16 on the phone, if you could mention your name?

17 MR. HALVERSON: Richard Halverson.

18 MR. HOFMANN: From what organization?

19 MR. HALVERSON: Energy Management
20 Systems in southern California.

21 MR. HOFMANN: Thank you very much. Any
22 other questions on the phone?

23 MS. CHUANG: Yes, second question on the
24 phone. This is Angela Chuang. Can you hear me?

25 MR. HOFMANN: Yes.

1 MS. CHUANG: What are the latest
2 thoughts on the origination of the signal? What
3 advance at the system level? Will cause the
4 notice to come down. In order to avoid getting
5 into an emergency condition like the stage 2
6 alert? Any thoughts from the utilities on what
7 the signal origination or signals would be?

8 MR. HOFMANN: I couldn't hear you
9 exactly, Angela. Are you asking what would be the
10 origin of the signals? Or what would the signals
11 be like?

12 MS. CHUANG: What would the event be
13 that would originate the signals. For example,
14 currently when you have stage two alerts from the
15 Cal-ISO as an event that would trigger certain
16 signals. But in order to avoid emergency
17 conditions like that, are there any thoughts of
18 what the events would be that the utilities would
19 be monitoring in order to trigger the signal?

20 MR. HOFMANN: I don't think I'm
21 qualified to answer that question. But I think in
22 terms of the research we have assumed that both
23 the IOUs and the Cal-ISO would have reason to
24 initiate emergency or economic signals, and that
25 they would work together to do that. That they

1 would find a way to work together to achieve
2 whatever reliability or economic response they
3 need.

4 But, again, I'm not qualified, really,
5 to answer that. I don't know if there's anybody
6 else here that would like to address that.

7 No takers, Angela.

8 MS. CHUANG: I guess it's who they
9 determine later.

10 MR. HOFMANN: Anybody else on the phone
11 that would like to ask a question?

12 MR. TULLY: Okay, I'm going to go ahead
13 and mute all again.

14 MR. HOFMANN: Okay. So I would like to
15 introduce our two panelists today. There are two
16 panels that we're going to have, one this morning.
17 At the end of this panel we'll adjourn for lunch.
18 And then after lunch we will have another panel in
19 which we will have a utility representative.

20 This morning's panel has representatives
21 from Honeywell and from White Rodgers. And both
22 have prepared remarks. And I will turn it over to
23 them in a minute.

24 Our speaker from Honeywell is Dan
25 O'Donnell there; he's raising his hand. And to

1 his right is Jeff Edgar. And so at this point
2 would you check your microphone there? Okay.

3 Dan, would you like to speak from here;
4 we'll set up your things. Or do you want me just
5 to --

6 MR. O'DONNELL: Either way.

7 MR. HOFMANN: Do you want to come up
8 here or do you want --

9 MR. O'DONNELL: Sure.

10 MR. HOFMANN: Okay.

11 (Pause.)

12 MR. O'DONNELL: Thanks. My name is Dan
13 O'Donnell; I'm Director of Product Management for
14 Honeywell on the electronic controls. We are the
15 division of Honeywell that manufactures
16 residential and commercial thermostats.

17 I appreciate the opportunity to be here.
18 Thanks to the Commissioner, to Ron, to the others
19 that we've been working with. Appreciate the
20 opportunity to be part of the dialogue.

21 I've only got a few things I want to
22 just comment on. And I really just want to make
23 sure everyone understands. We acknowledge,
24 Honeywell supports this concept. We've had the
25 opportunity to participate in the dialogue, and

1 we've got some opinions on how to make it a very
2 open environment for all manufacturers to work in.

3 And to make it very easy for the
4 implementation of it among homeowners and
5 contractors, who ultimately will be responsible
6 for helping us make them successful.

7 One thing I hope everyone appreciates
8 and understands is that the HVAC industry, the
9 equipment manufacturers, of which we were one of
10 them, with the thermostat, we are evolving to
11 advanced communicating systems. There's a lot of
12 work that's going on out there right now that I'm
13 not sure everyone's aware of that I think it's
14 important to understand and keep in perspective of
15 what's going on out there.

16 Manufacturers such as Honeywell, White
17 Rodgers, others, Carrier are creating and have
18 been developing for some time communicating
19 systems so that all the equipment that is inside a
20 home today, or inside of a commercial building is
21 already talking to each other.

22 So the proposed amendments to Title 24,
23 as they're contemplated, a big element of that is
24 that the devices inside the home communicate to
25 each other, and that they respond to signals

1 coming from the outside.

2 So a lot of that work is going on, and I
3 really want to focus on that element of it.
4 There's a lot of investment going on, a lot of
5 good work there. And I want to make sure we
6 understand, and from our perspective then it's not
7 solely about the thermostat.

8 The Title 24 amendment, as proposed, we
9 have been referring to all morning, the PCT, the
10 programmable communicating thermostat, well,
11 that's one element of this. But my perspective
12 and Honeywell's perspective is that we really need
13 to keep a broader perspective to how this system,
14 this HVAC overall will receive and respond to the
15 signals that will be coming into it.

16 One thing that we think is
17 extraordinarily important is that the focus, no
18 matter what device is created or how the system
19 works, that the focus really remain on ease of use
20 for the customer and for the contractor.
21 Ultimately those are the two constituents that are
22 really going to have to help us implement this, as
23 I was trying to say earlier.

24 The homeowner may be buying this at Home
25 Depot or Lowe's at retail and taking it home and

1 installing it. And, today we have found that the
2 adoption of programmable thermostats has been
3 difficult when they're not necessarily easy to
4 use.

5 Honeywell's been spending a lot of time,
6 as I know White Rodgers has, in really focusing on
7 making programmable thermostats very easy to use
8 so that consumers get the benefit of the energy
9 savings that can be derived from them.

10 And it's important that anything we do
11 here really remain very easy to use, again for
12 both the contractor to install and the homeowner
13 to use. So when we talk about things such as
14 expansion ports and ethernet connections and
15 communicating to the user what is happening, we
16 have to make sure we do it in a way that's very
17 easy for them to understand and very easy for them
18 to control as they interact with it.

19 A final point I want to make is that as
20 we talk about timelines and implementing that, the
21 industry that we're a part of, it's not a real
22 glamorous industry necessarily. So the
23 distribution channels that we operate through, the
24 trade channel, the retail channel and OEM are very
25 slow to implement change.

1 It's a very mature business; it's been
2 very stable. And new technology is not always, in
3 fact it is rarely accepted with open arms, and
4 just taken blindly. I know that's not what we're
5 talking about here, but we just want to make sure
6 we understand the timeline to actually have this
7 implemented could be something that's much longer
8 than it's currently contemplated.

9 I refer to available resources. What I
10 mean there is resources from a manufacturing
11 perspective, to actually design, test, manufacture
12 and distribute a device such as a thermostat takes
13 quite a bit of time. So I just want to caution
14 everyone, when we talk about the timeline that's
15 contemplated here by having this available in 2008
16 we really need to make sure that we are working
17 very closely together to come to some consensus on
18 what these standards are, so that the industry can
19 respond and produce devices that will work here.

20 And the same thing happens in the
21 distribution channels, in trade, in retail; to
22 have those contractors and distributors really
23 understand how this system will work. I think
24 there's a huge amount of education that's going to
25 be required. And, again, we really have to make

1 sure we allow the time for them to absorb that,
2 and to be comfortable with this, to make sure that
3 these systems are being implemented so they do
4 work effectively.

5 UNIDENTIFIED SPEAKER: Space bar --

6 MR. O'DONNELL: That's what I'm doing.
7 The space bar's not working for me right now.
8 Here we go, okay.

9 I know this is a lot. And this is only
10 for example. This is not for everyone to read and
11 absorb. But I don't know if everyone has seen
12 some of the proposed language that has been
13 suggested for the amendments to Title 24
14 specifically as it relates to a thermostat.

15 And what I've done here is, what I'm
16 trying to communicate is that, again, Honeywell
17 very much supports this concept for what Ron and
18 Mazi have been talking about. We very much
19 support that. And this is intended to address
20 somewhat how we go about doing that.

21 The proposed language has been referring
22 to, and we've been talking about, programmable
23 communicating thermostats. And what I'm
24 suggesting is that in order to be very successful,
25 I think that if we keep this language very open

1 and refer to the HVAC system and what we want it
2 to do, that I think we have many more
3 opportunities and choices for how we go about
4 making this happen.

5 Mazi made a comment to me this morning
6 that really rang true. There's more than one way
7 to skin the cat here, and it's not necessarily
8 about the thermostat.

9 So what I'm suggesting is, is that to
10 keep this broader and to allow more technology in
11 and more participants in this thing than just
12 focusing on the thermostat, itself, to control
13 this.

14 What I'm saying is that the
15 communicating HVAC system shall be capable of
16 receiving this signal to come in. So it doesn't
17 necessarily have to come to the thermostat itself
18 that's inside your dining room or in the hallway,
19 or maybe in some utility room in an industrial
20 building.

21 Think about a receiver or a module that
22 could be installed or part of the outdoor AC
23 compressor. It might be very easy for that signal
24 to be received outside, and then send the request
25 inside to the HVAC system to do something; to

1 either setback the temperature or whatever it's
2 supposed to do.

3 But, again, I've not changed any of the
4 wording on the proposed language that Mazi has put
5 out before, but really just refer to a
6 communicating system rather than a thermostat,
7 itself.

8 The next part is we've talked about, and
9 someone just asked a question about, what type of
10 receiver would be. I don't know if it would be
11 AM/FM. I understand that a signal has to be
12 received, but let's just say that a receiver needs
13 to do that. And, again, the way we go about doing
14 that, how the industry does that, and who creates
15 that chip set or that module that allows us to do
16 that, we leave that open so that we're not
17 necessarily constrained for future technologies or
18 future ways to accomplish the same thing.

19 Upon receiving the signal the HVAC
20 system will adjust; that's as it's required to do.
21 We talked about expansion methodologies and how to
22 retrieve diagnostic information out of the system
23 so we know what it's doing. And one proposal was
24 that perhaps a USB port or an ethernet connection
25 might accomplish that.

1 Those absolutely could be ways to
2 accomplish this, but really the overall need, the
3 WHAT is just that the system must be capable of
4 doing this. Why not allow for wireless technology
5 to accomplish the same thing. We're already
6 talking about having a wireless receiver in there.
7 Perhaps there's another more cost effective or
8 simpler way to do that that acknowledges and
9 accomplishes the same thing.

10 And finally, there was discussion about
11 how the system will communicate back to the user
12 what's happening. In early parts of the language
13 that was proposed, we talked about having
14 different sort of lights that communicate, or
15 different signals that come through. And, again,
16 I think that if we leave that open, we just say
17 that whatever the device or system is, it must
18 communicate back to the user. There are many many
19 ways to accomplish that.

20 There would be a difference between how
21 it might be done in a residence versus a
22 nonresidential building. A consumer may want to
23 go to the device on their dining room wall and see
24 what's happening. That may not be the case in a
25 commercial application. Maybe it needs to come

1 through a control room or some other control
2 system.

3 And, again, maybe the end user doesn't
4 want to, or is not available to go to their dining
5 room to see what's happening. Maybe they're
6 traveling or on vacation and they want to receive
7 an email.

8 So I just want to make sure that we
9 leave open the opportunities for how we can
10 accomplish these things. Again, we very much
11 support the WHAT and we think that the how, rather
12 than being prescribed too specifically, if we
13 leave it open we can accomplish the same thing in
14 many different ways.

15 Those are my comments. Thank you very
16 much.

17 MR. HOFMANN: Any clarifying questions?
18 Jeff, do you want to sit there or do you want to
19 come here?

20 MR. EDGAR: I'll stay --

21 MR. HOFMANN: Okay. So this is Jeff
22 Edgar from White Rodgers.

23 MR. EDGAR: Good morning, everyone. I
24 have a prepared statement on behalf of White
25 Rodgers, so I'm just going to read that to

1 everyone. And I'll be happy to take questions
2 afterwards.

3 My name's Jeff Edgar; I'm the Director
4 of Marketing for White Rodgers. On behalf of
5 White Rodgers I would like to thank the California
6 Energy Commission for the opportunity to voice our
7 opinion as it relates to California's demand
8 response system.

9 We've been asked to comment on the four
10 categories of system integration interface issues.
11 These four categories are communications
12 interface, expansion port interface, HVAC
13 equipment interface and human interface.

14 I'll address these categories
15 sequentially. First, we support the
16 communications interface as outlined.

17 Second, we do not support the expansion
18 port interface as outlined, particularly the
19 memory stick data storage capability. While this
20 technology exists and can be incorporated into a
21 thermostat design, the product development
22 timeframe, product size and product cost would be
23 prohibitive.

24 The third integration interface issues,
25 HVAC equipment interface, we support the HVAC

1 equipment interface as outlined.

2 And lastly, we support the fourth
3 integration interface issue, human interface.

4 Thank you. Any questions?

5 MR. HOFMANN: Tony's unmuting the
6 phones. Anybody that has questions on the phones?
7 We'd like to leave the open discussion for this
8 afternoon when Mazi facilitates the discussion
9 after the utility panel. But for now we'll take
10 clarifying questions.

11 We have one from the audience here, Mike
12 Gravely.

13 MR. GRAVELY: I just wanted to know, you
14 have --

15 THE REPORTER: Will you wait till he
16 comes with the mike, please.

17 MR. GRAVELY: Mike Gravely from the
18 Energy Commission. I'm just curious if you had,
19 briefly, an alternative to the expansion port that
20 you are considering, or do you just want to
21 research that further to a better alternative?

22 MR. EDGAR: We don't have a specific
23 recommendation; however, Dan brought up in his
24 presentation that there are many different
25 technologies that can accomplish the same goal.

1 And as my understanding is the goal is to be able
2 to update this device with whatever it may be.
3 But it's an interface to be able to interact with
4 the device and give updates or upgrades or
5 whatever the need is at the current time.

6 Again, we haven't researched this, but
7 I'm quite confident there are other technologies
8 that would be more cost effective to accomplish
9 that goal. One may very well be wireless.

10 MR. HOFMANN: There's somebody on the
11 phone; would you speak up, please?

12 (Inaudible Phone Conversation.)

13 MR. HOFMANN: We can't understand
14 whoever is speaking on the phone, would you please
15 get closer to your phone and speak clearly?

16 UNIDENTIFIED SPEAKER: Oh, that might be
17 us.

18 MR. HOFMANN: Are there any people on
19 the phone link who would like to make a statement
20 at this time?

21 MS. ROOK: This is Laura Rook at
22 Portland General. I have a question.

23 MR. HOFMANN: Go ahead, Laura.

24 MS. ROOK: For Honeywell, I notice on
25 your slide you said that change in increments

1 would be two degrees up or down. How did you come
2 to 2 degrees and why?

3 MR. O'DONNELL: Actually that language
4 didn't come from me; that was actually in the
5 proposed language that was sent out by the CEC or
6 PIER. So, the only things we changed are the
7 comments that are in bold. Basically I changed
8 the focus from a PCT to a communicating HVAC
9 system.

10 MS. ROOK: Okay, I'm sorry, I didn't
11 realize that's where it came from.

12 (Parties speaking simultaneously.)

13 MR. O'DONNELL: I think that two degrees
14 was suggested --

15 MS. ROOK: It came from someone then at
16 the CEC --

17 MR. O'DONNELL: -- suggested language --

18 MS. ROOK: -- the answer of how you came
19 to the two degrees.

20 MR. O'DONNELL: I'm sorry?

21 MS. ROOK: I didn't realize where that
22 language had come from. So is there anybody there
23 that can answer where the two degrees came from --

24 MR. O'DONNELL: Perhaps -- I think Mazi
25 might answer that.

1 MR. SHIRAKH: This is Mazi. The two
2 degrees actually has been amended since then and
3 based on some conversations we had with Southern
4 California Edison. And they have suggested that
5 the initial signal should be four degrees, set
6 down for cooling and set up for heating in the
7 heating mode.

8 And this is based on SCE's extensive
9 experience with DR and PCTs. They've been running
10 these programs for awhile and what they have
11 noticed is that with four degrees, anything less
12 than four degrees actually doesn't give them
13 enough reduction in peak demand to make it work.

14 And their experience has been four degrees.

15 We have a couple of folks here from SCE.
16 I don't know, Carlos, if you want to add anything
17 to this.

18 MR. HAIAD: I agree 100 percent.

19 MR. SHIRAKH: Carlos says he agrees 100
20 percent with me, so.

21 Actually I had a question for Jeff. Do
22 you agree with what Honeywell is presenting here,
23 their vision?

24 MR. EDGAR: I didn't think I'd ever say
25 this, but yes, I do agree with Honeywell.

1 (Laughter.)

2 MR. EDGAR: There is a lot of activity
3 in the HVAC industry right now relating to
4 communications. And the devise that is kind of
5 the interface between the outside world and the
6 HVAC system in a building is not completely
7 defined.

8 So I do agree that I have no reason to
9 say the thermostat is the right or not the right
10 device to make this connection.

11 The one advantage the thermostat has
12 over the other parts of the system is that the
13 thermostat directly connects to the entire system.
14 Where if you use any other component in the
15 system, you have to use the thermostat, most
16 likely, as, you know, as kind of a routing medium,
17 if you will. Now that depends upon how the system
18 is set up.

19 But if you use technology that's
20 available today, your air conditioning unit or
21 your furnace unit that you can go buy in today's
22 world, that equipment is not ready to communicate
23 through the entire HVAC system. Where the
24 advantage of the thermostat would be -- is that it
25 is hooked to everything, and it doesn't require

1 communications network through the entire system.

2 MR. HOFMANN: I have one question from
3 the WebEx from Charles Glorioso, and his question
4 is to Jeff. And he's asking the question are you
5 opposed to the concept of an expansion port, or
6 are you just opposed to the USB incarnation that
7 was proposed for the R&D?

8 MR. EDGAR: We are not opposed to the
9 concept of being able to upgrade or expand the
10 capabilities of the product. One of the things
11 that, when we, as a team at White Rodgers, when we
12 were discussing this, one of the things that
13 continued to come up is that, you know, we're
14 certain that the goal of this initiative is to
15 develop a product that's cost effective and meets
16 the goals of the project.

17 And it seems to us that there may be a
18 little redundancy here. In the sense that you've
19 built into this product a telephone-type interface
20 so that it's extremely easy to upgrade.

21 And if that's the case, it's our opinion
22 that it would be prohibitive from a cost
23 perspective to build too much into every unit to
24 upgrade compared to just having the ability to go
25 and buy a new unit and upgrade it in that manner.

1 MR. HOFMANN: Thank you. Since Charles
2 is not on the phone, I'll just assume that that's
3 a satisfactory answer.

4 Next question from Erich Gunther.

5 MR. GUNTHER: Erich Gunther with
6 EnerNex. Just a clarifying question for comments,
7 I guess both of you have made, but Dan brought it
8 up initially. You've been focusing on the system
9 aspect of it. Is the reason we are focusing on
10 system, as to a thermostat, is because of this
11 tendency in the industry to decouple the
12 temperature-sensing element from the control
13 element? Is that really what you're trying to get
14 to?

15 MR. O'DONNELL: Excuse me. That may be
16 part of it, but I guess I probably wasn't even
17 being quite that specific. And let me just
18 clarify.

19 First of all, the thermostat is
20 certainly part of the system. And we hope and
21 allow that a thermostat is one of the solutions
22 that certainly could be used, giving this sort of
23 language. So, I'm not saying a thermostat is not
24 part of the equation by any stretch of the
25 imagination. I'm just saying that there's many

1 more ways to do that, and that with all the
2 advanced communications that's happening now, I
3 think there's many other opportunities to find
4 ways to very easily and cost effectively
5 accomplish the same thing.

6 So, while a thermostat is going to be
7 part of the equation, thermostats that do this
8 will be built, I'm not saying do not build a
9 thermostat that does that. I'm just saying allow
10 for other options, as well.

11 And allowing talking about having
12 modules that might plug into some of the
13 communication systems, advanced communication
14 systems that are being developed in HVAC systems
15 today, and just plug into that. Receive that
16 signal and just come into the system someplace
17 else, but accomplish the same thing.

18 Does that clarify the question?

19 MR. GUNTHER: Yes.

20 MR. O'DONNELL: Great.

21 MR. HOFMANN: The next question is from
22 Commissioner Rosenfeld.

23 COMMISSIONER ROSENFELD: Art Rosenfeld,
24 Energy Commissioner. I don't -- I'm sorry, this
25 is a comment to Dan O'Donnell.

1 I don't object at all to a generally
2 thought-out system, that's wonderful. You should
3 realize, of course, that our powers, in terms of
4 Title 24, are to specify a thermostat. We have
5 been doing that for 25 years.

6 And we are faced with what the hell are
7 we going to do about that in 2008. So, you should
8 understand a little bit that to work along with
9 the system we would feel a little strange about
10 saying yes, you've got to have the old fashioned
11 25-year-old clock thermostat and some new-fangled
12 device in addition. I mean that's going to be
13 hard to play.

14 So be a little sympathetic to our powers
15 and our timing needs.

16 MR. O'DONNELL: Yes, thank you,
17 Commissioner. And I just wanted to -- I
18 appreciate that. I understand. I do want to
19 reiterate, given the timeline, and one reason I
20 bring this up is because there is unknown right
21 now. Until a standard is worked and adopted and
22 understood, there's certainly the time element
23 that I'm very sensitive to, which is, you know, I
24 believe September, November of 2008 to have this
25 implemented.

1 From a manufacturer's point of view,
2 simply from trying to understand what the product
3 requirements would be, it's going to be some
4 months obviously until that information is
5 understood, so that manufacturers, all
6 manufacturers, will have the ability to actually
7 go out and act upon that.

8 Manufacturers such as White Rodgers and
9 Honeywell, we're among the larger manufacturers,
10 resources are not necessarily readily available
11 for us, but probably more available to us than
12 they might be to other manufacturers.

13 And while I'm not overly concerned about
14 my other competitors, I am aware that there are
15 probably 15 or 20 manufacturers that sell
16 thermostats in California that would have to be
17 able to design such equipment that may not
18 necessarily have the resources or technology as
19 readily available as other companies might.

20 So, it was just a word of caution from
21 my perspective, just simply as a manufacturing
22 process, to understand the definition of the
23 product; to actually go out and develop it; to
24 test it; to make sure it's interoperable with all
25 these communication systems that are out there.

1 To have that done in two years, it's a stretch.

2 It is a stretch from a manufacturing perspective.

3 MR. HOFMANN: The next question's over
4 here.

5 MS. SCHILBERG: Gayatri Schilberg
6 representing TURN. You told us that the industry
7 is slow to adapt, and I know there are many steps
8 along the way, including education of your
9 distributors, plus the design and testing of the
10 product device.

11 What is the normal time that you would
12 need to conceptualize a new device such as this?
13 Maybe not exactly this one, but what would be the
14 normal time from say product specification to
15 design, testing, manufacturing, educating all the
16 people. So that like how many years are we
17 talking?

18 MR. O'DONNELL: There's a couple ways to
19 answer that, and I'll speak in fairly general
20 terms. But you asked two questions, I think.

21 One was what is the timeline for the
22 manufacturing process. And I think the other
23 question I heard was referring to my comment about
24 the industry slow to change and really talking
25 about the distribution channels.

1 Literally the HVAC wholesalers,
2 distributors and the contractors that purchase
3 this equipment and install it, there's two
4 different timelines there.

5 Generally speaking, without getting too
6 specific, from the time a product is conceived, as
7 we're beginning to do now, really no work can
8 begin. There's no one at Honeywell working on
9 this. I doubt if there's anyone at White Rodgers
10 working on this. There's no engineer that begins
11 to do anything until a product specification is
12 finalized And a lot of work has to go into that.

13 So, the adoption of this standard of
14 whatever language it is, is the first step to
15 going through and then defining exactly what it is
16 we're going to go build.

17 But it would be very conceivable that
18 even a basic consumer electronic product could
19 take 18 to 24 months from the time it is conceived
20 to the time it's actually in the marketplace,
21 depending again on the complexity of it.

22 That's the first part, is actual
23 development of the product.

24 The second part, and what I was
25 referring to in my presentation, was I think it's

1 very important that everyone that's involved in
2 this understand the HVAC industry, and I was
3 specifically referring to primarily the trade
4 channel, as Honeywell calls it, that is
5 traditional HVAC distributors or wholesalers, and
6 contractors. It's a very established, mature
7 business.

8 And maybe I'll just give an example of a
9 traditional new thermostat that we might
10 introduce, or White Rodgers might introduce to the
11 marketplace. You have to understand that most
12 contractors, trade contractors that install these
13 products are very small businesses; typically
14 three to five employees. Many of them are sole
15 proprietorships. Think of a, you know, a single
16 owner with a van or a pickup truck out driving
17 down the highway and coming to your house to
18 maintain your equipment.

19 In many cases those businesses have been
20 inherited from someone's father, who inherited it
21 from their grandfather. And that business
22 methodology has existed for quite some period of
23 time.

24 Contractors are very comfortable, they
25 get very comfortable with a particular product

1 they might install as their standard programmable
2 thermostat, for example. There might be
3 contractors out there that simply prefer Honeywell
4 products only because they've used them for a very
5 long period of time. There are contractors that
6 prefer White Rodgers products simply because
7 they're used to them, they know that they're not
8 going to have a problem with them and they just
9 become comfortable with that.

10 And even when either one of our
11 companies, or any of the other many manufacturers
12 that are out there, introduce a new product, in
13 many ways we expect a wait-and-see attitude when a
14 new product is introduced. Because contractors,
15 the main thing you have to understand about
16 contractors is they do not want to install a
17 product, any product that's going to get what is
18 called a call-back.

19 That is they come out to your house.
20 They put a new furnace in; they put a humidifier
21 in. They may install a new thermostat. The last
22 thing they want is for you, the homeowner, to call
23 them back and say, I don't understand how to
24 program this thermostat; I don't understand why
25 it's so humid in my house; I don't understand why

1 this system's coming on or off at crazy times.
2 Anything that requires a contractor to go back to
3 someone's house, that's money out of their pocket.
4 And, again, these are very small businesses that,
5 in many ways, operate on very thin margins.

6 So there is generally a hesitancy, even
7 when we, as manufacturers, introduce fantastic new
8 products. We have to allow for the adoption of
9 that product in the marketplace. We have to prove
10 to contractors that's going to be a high quality
11 product that's not going to cause them to get
12 call-backs or to go have to deal with something
13 where they didn't have to before.

14 And that also can take a few years to
15 accomplish before a product would be considered
16 fully adopted in the marketplace.

17 Sorry if that was a long answer, but I
18 do want everyone to understand the intricacies of
19 this industry. And I don't know if Jeff would
20 have a different opinion, but it's important to
21 understand who we're dealing with that's going to
22 execute this program for us.

23 MR. EDGAR: A few points that I would
24 make related to your question. One is I'll give
25 you a real world example. We have several

1 projects across the country today with various
2 utilities where we're working with them on systems
3 similar to what we're talking about here,
4 certainly not the same architecture, but end
5 result being somewhat similar.

6 And an example of one is we started a
7 project in January of 2003. And we shipped the
8 working bugs fixed, first shipment to them in
9 January of 2006, last month. Now this is, I
10 think, extraordinarily long because this was our
11 first venture into this type of a product. So we
12 had some learning to do as an organization. We
13 had some intellectual property to develop.

14 But it's certainly the case that time is
15 of the essence in this. If we have a November 1,
16 2008 introduction target, we really should be
17 working on this immediately. It's going to be
18 tight, as it is. If I could walk back to White
19 Rodgers tomorrow with the spec in hand, my
20 engineers would fight me as it is, you know. So
21 it's certainly very important to do this in as
22 timely a manner as possible.

23 The other thing I'd like to comment on
24 is related to our industry; the HVAC industry and
25 the contractors, the people that are out there

1 installing and dealing with this stuff on a day-
2 to-day basis.

3 It's absolutely accurate that we have a
4 very slow-to-adopt industry. We still sell, and I
5 would imagine Honeywell is similar, we still sell
6 over a third of our volume in thermostats is the
7 old mechanical style thermostat with the slide
8 switch up and down. And it's certainly not
9 because it's a cost effective solution. And it's
10 certainly not because it's a good solution. It's
11 because it's the easiest thing on the market to
12 use.

13 And we have many contractors that don't
14 want to run the risk of having a call-back. You
15 also have many homeowners that don't want the
16 complication. You know, it's been in the news
17 lately, the baby-boomers are retiring, the first
18 wave of baby-boomers are retiring. And we have a
19 very large percentage of our population that are
20 up in age. And they tend to be most averse to
21 programming and those types of products.

22 So, one of the things as well that we
23 haven't gotten to this point yet, I know, but I
24 think ease-of-use is really of the utmost
25 importance in this, to get the state, as a whole,

1 to adopt this as a positive and useful everyday-
2 type of technology that they can interact with.

3 MR. HOFMANN: We've got about eight or
4 nine people in the queue for questions. And what
5 I'm going to do is cut it off at 12:30 so you can
6 have an hour for lunch. And then we'll get back
7 on schedule at 1:30.

8 But I'm going to take the next four or
9 five or six questions until 12:30. And I
10 appreciate your willingness to sit up there.

11 So, Mr. Parnell, you're on the
12 telephone, you're next in line. Mr. Robert
13 Parnell.

14 MR. PARNELL: Hello.

15 MR. HOFMANN: Hello. Go ahead and ask
16 your question.

17 MR. PARNELL: Sure. My question is
18 would you please comment on the idea of using
19 ZigBee as the thermostat's, quote/unquote,
20 interface?

21 MR. EDGAR: ZigBee, for anyone who isn't
22 aware of the technology, it's a wireless
23 technology. And the vision of ZigBee is to have a
24 technology that any OEM manufacturers device can
25 interact and talk the same language, and so you

1 could hook up a lightswitch from one manufacturer
2 and a thermostat from another manufacturer and
3 whatever else, and they would all be able to talk
4 and communicate and interact.

5 We are not adverse, nor are we
6 supporters of ZigBee. We're very neutral. There
7 are several different technologies that exist in
8 the wireless realm. And we certainly support, and
9 we are headed down a path of open protocols, open
10 communication. But ZigBee is no more or no less
11 than any other way of achieving that at this
12 point.

13 MR. O'DONNELL: The only thing I'll add
14 is that when you talk about ZigBee or any wireless
15 technology or really what I want to get at is any
16 increased functionality of this device, whether
17 it's a thermostat or not a thermostat, whether
18 it's wireless or not wireless, one thing you
19 really do need to consider is the power
20 applications, the power requirements of the
21 product.

22 ZigBee, for example, for wireless is
23 conceived as a low power technology, requires less
24 power than others might. But that's going to be
25 very important.

1 Traditional thermostats are low volt
2 products. And when we think about adding
3 capability that's being contemplated here, whether
4 it's wireless, whether it's not, we do have to
5 understand the impact of power requirements on the
6 thermostat and processing requirements on the
7 thermostat.

8 They're both very important to consider.
9 The do add complexity. They do add cost and they
10 do add development time. Certainly a very
11 worthwhile question to ask and to understand the
12 implications of.

13 MR. HOFMANN: Next question.

14 MR. KUHLMANN: My name's Mike Kuhlmann
15 with RCS. All this having been said about the
16 schedules and realistic timing, are you prepared
17 to recommend that the schedule is unrealistic?
18 And, if so, what would be an appropriate schedule
19 to really implement this kind of technology?

20 MR. EDGAR: The White Rodgers' position
21 is that we really can't give an accurate answer to
22 that question until we know the specific
23 requirements.

24 I think we should all have an open mind,
25 however, that when the day comes when you hand us

1 your requirements and say I want one of these, we
2 need to -- that's the day we can come back and
3 give a realistic idea of the soonest we can make
4 that happen.

5 And it is possible that we could not
6 meet the November 1, 2008 date that's been
7 outlined.

8 MR. HOFMANN: Next question, Alex Do.

9 MR. DO: Hi, my name is Alex Do; I'm
10 here from UC Berkeley. My question is really to
11 Dan's statement about keeping the language open
12 about technologies. And I just want to get both
13 of your opinions, as manufacturers, about how that
14 affects interoperability in terms of all the
15 different stakeholders.

16 And now you've got different
17 manufacturers going down different roads about how
18 to send a signal or communicate. How does that
19 affect everyone else?

20 MR. O'DONNELL: I think what I'm
21 suggesting is not to leave it necessarily so open,
22 I mean as far as specific language that would be
23 enacted into law. But what I'm suggesting is that
24 it be left open so that, you know, the different
25 players at the table, whether it's a thermostat

1 manufacturer, whether it's a utility company,
2 whether it is a furnace manufacturer, can come to
3 the table and bring their expertise, their market
4 knowledge, their experience and their technology
5 to the table.

6 I think what I'm suggesting is that in
7 very simple terms is let industry figure it out.
8 Let us come together. What I'm suggesting is
9 language that would force the industry to come
10 together and sit down in cooperation with the CEC
11 or whatever forum, to really figure out what that
12 is.

13 I'm not necessarily -- and determining
14 what those technologies are and what the different
15 options to do this might be.

16 I think there is a thermostat solution.
17 I think there might be another equipment interface
18 module solution. There might be some remote
19 module that could tie in here.

20 So, I'm not saying necessarily that it's
21 just wide open and everyone can do 8000 different
22 things. What I'm saying is what is prescribed is
23 left open and allows us to come together as an
24 industry; bring all the best advances that we've
25 been working on and figure out what that proper

1 solution is. That's what I was trying to say.
2 Don't know if that answers your question
3 specifically or not.

4 MR. HOFMANN: Commissioner Rosenfeld.

5 COMMISSIONER ROSENFELD: Hi, again. I
6 have a trivial comment and then a serious
7 question.

8 The trivial comment is in terms of the
9 delay to your very conservative distribution
10 system, you know this, but just for the sake of
11 the folks in the room, we, of course, are not
12 proposing that you have to sell PCTs to 12 million
13 homeowners in California.

14 Our problem is quite specific, it's new
15 buildings. It's around 150,000 to 200,000 a year.
16 They will be mainly purchased, in fact, by
17 production builders who will specify and send
18 somebody to their supplier to get them.

19 And so some of your delay obviously will
20 take place, and it doesn't matter at all, because
21 we have ten years or so before the state even has,
22 all of the state has the smart meters.

23 MR. O'DONNELL: Commissioner, is it
24 contemplated under the timeline that when this is
25 enacted that all distribution channels would be

1 available at the same time? Would it be available
2 at retail at the same time it's available in new
3 construction versus trade, or is there flexibility
4 there?

5 COMMISSIONER ROSENFELD: It's simply you
6 bet. In fact, I would hope that there would be
7 two classes of distribution channels. One would
8 be, you know, the hardware supplier, and the other
9 might be that the utilities, themselves, would
10 decide they could make a buck by offering to
11 install this, to their non-new customers, to their
12 existing customers.

13 The most serious point, and this is
14 probably a lunchtime discussion, is you said
15 several times that you don't have anybody working
16 on this yet, either of you. And you're sort of
17 waiting around for us to write specs.

18 So my question is what the hell does it
19 take to get you guys off the dime? And work
20 either with us or between you to come up with some
21 proposals. Because, in fact, the clock is
22 ticking. And we don't want to be the bottleneck.

23 MR. O'DONNELL: When I'm referring to
24 timelines and what I presented is that certainly
25 companies like Honeywell, and I'm sure White

1 Rodgers, and some of the other larger
2 manufacturers, not necessarily all
3 manufacturers -- and keep in mind, there are many
4 manufacturers of thermostats. I wish that wasn't
5 the case, but indeed there are, of all shapes and
6 sizes.

7 Certainly companies like Honeywell, we
8 have advanced labs that are working on all sorts
9 of future technologies, none of which I care to
10 speak about here, but, yes, we are.

11 What's important to understand though,
12 is that the fastest way to actually develop a
13 product and get it to market, is to develop a
14 product off a platform, if you will, much like an
15 automobile manufacturer may take a pickup truck
16 and make an SUV out of it and a van, we really can
17 operate most effectively and most efficiently when
18 we're introducing products based upon existing
19 platforms or platforms that'll come to the market
20 in fairly short periods of time.

21 When you ask specifically the question,
22 what's it take to get us off the dime and why
23 isn't there anyone working on this, is that very
24 specifically, and I think it's probably common
25 again in most industry today, is that engineers

1 are working on projects that will very
2 specifically come to market in some period of time
3 to provide revenue back to us for that R&D expense
4 that's going.

5 There is nothing here specifically for a
6 device you can hold in your hand to work on yet,
7 because we don't understand what all those
8 requirements are. What is the expansion
9 interface? Is it a USB port? Is it wireless?
10 You can't begin to go develop something
11 specifically, to lay out a board, to write
12 software, to design a plastic cover for it until
13 you understand exactly what those things are.

14 So, while there is certainly all the
15 benefit and knowledge of our thermostat expertise
16 working ably right now, specifically on a device
17 that will meet this requirement, that does, as
18 Jeff indicated, that really can't practically
19 start until we have a document in hand and we say,
20 okay, we know we're going to need this many
21 software engineers, this many mechanical
22 engineers, this many, you know, electronic
23 engineers. And set them off on a task to go build
24 something to a specific timeline.

25 MR. EDGAR: I agree with everything that

1 was just said. We have, as any organization, a
2 limited number of resources. And those resources,
3 fortunately when it comes to thermostats, we have
4 more opportunity than we have time to work on them
5 oftentimes.

6 It is, I think, nearly impossible, I
7 think it's highly unlikely that White Rodgers
8 would start working on a project like this until
9 we had a specific spec that said, this is what I
10 want it to do, and this is how it will work.

11 For example, the example that was just
12 used, the memory stick or some device, some
13 expansion opportunity or ability. That would be
14 two completely different thermostats. One that
15 was designed to do that and one that was not.

16 And we just really can't do a good job
17 of designing a product until we know those kinds
18 of things.

19 MR. HOFMANN: And we have two --

20 MR. O'DONNELL: And I just again want to
21 reiterate, and I don't normally do this, and I
22 don't want to appear too concerned about my
23 competitors, but it is very important to
24 understand and acknowledge that again there are a
25 lot of manufacturers.

1 You have two of the largest here at this
2 forum, which is great, and I know others were
3 probably invited. But it's very important to
4 understand, I would believe, the impact on
5 manufacturers that don't necessarily have the
6 resources or the technologies to go build this.
7 What is the impact to those manufacturers in the
8 State of California if they are not able to build
9 this?

10 I suppose that might be good for me and
11 other larger manufacturers, but I think that those
12 other manufacturers would have a real concern
13 about meeting timelines and having technology
14 available that they could sell a product and be
15 competitive with it.

16 MR. EDGAR: I have one more comment
17 about one of the things the Commissioner said.
18 From a positive perspective, while it's true that
19 our industry is slow to adapt and slow to change,
20 there's certainly a part of us that's excited
21 about the opportunity to, with the input such as
22 you have, to tell the State of California that
23 you're going to go to a more technology-rich
24 thermostat, and you're going to go to a demand
25 response time thermostat. And you're going to

1 force people to learn it, and force people to
2 adapt.

3 So, there is a very positive aspect, as
4 well. I think we're both just trying to make sure
5 that there aren't any surprises. Because there
6 will be some challenges there. That doesn't mean
7 that we won't succeed in this initiative, and that
8 contractors won't adapt and really, you know, step
9 up and make the changes necessary. But there will
10 be some challenges.

11 COMMISSIONER ROSENFELD: Well, I do, in
12 fact, think that we should pursue this over a
13 sandwich. And I realize that it's not completely
14 democratic; there are two of you here and I can't
15 invite the folks who are on WebEx to lunch.

16 But, I'm still -- would like to ask you
17 one last question, and that is is there really any
18 big uncertainty in your mind? I mean we described
19 a fairly simple idea. We're going to send a
20 signal. It's going to be predictively ten times a
21 year; it's going to be 24 hours ahead of time;
22 saying tomorrow's going to be a critical peak day.
23 One time every three years it's going to be more
24 an emergency set your thermostat off quick and
25 automatically can't override it emergency signal.

1 It's got to be pretty much available
2 statewide. You may want to have some adapter, I
3 hate to use the word memory stick, which makes it
4 specific to San Diego or Southern California
5 Edison or PG&E. It's got to have some indicator
6 lights to show that it's really working. It's got
7 to have a goddam simple interface. It's got to
8 have a default that you can set it back there
9 after it's all screwed up.

10 You know all that already. Is there
11 anything really that we have to do before you come
12 up with a proposal? You know, you may propose a
13 RJ-47 instead of a memory stick. I don't care. I
14 just want that there be some sort of an interface.

15 Let's talk about whether there's any
16 real bottleneck here. Okay.

17 MR. HOFMANN: Let me just -- I've lined
18 up two last questions before lunch. And remember,
19 everybody, after the utility panel there will be
20 plenty of time to talk. I assume our panelists
21 won't be worn out.

22 But, Ralph Abbott from Plexus is on the
23 line with a question. Please go ahead.

24 MR. ABBOTT: Yes, my question really
25 relates to residential light commercial

1 application, and the concern that the
2 communicating smart thermostat be an effective
3 tool that the consumer can voluntarily purchase,
4 either install or have installed, and achieve
5 benefit. That he can do all this with confidence.

6 My question here is really just posed
7 generally as a concern. One is that if we are to
8 have a critical peak pricing event, let's say
9 tomorrow. Presumably the consumer can select the
10 degree to which that thermostat will respond. If
11 they're looking at \$1 per kilowatt hour, perhaps,
12 his choice may be to simply suspend operation of
13 his HVAC entirely; or to select any of a variety
14 of increased set points.

15 My question is am I safe in presuming
16 that's part of the menu here that we're looking
17 for?

18 And before seeking the answer to that,
19 the second would be it seems to me that if I go to
20 Lowe's or Home Depot or the corner hardware store
21 and procure this communicating smart thermostat,
22 that I need some indication that if I take this
23 home and open the box and install it, it will
24 work. Which leads me to the belief that what
25 we're going to need is a Good Housekeeping seal, a

1 certification, an Intel-Inside kind of
2 representation that if I'm in PG&E or
3 SouthernCal's territory, and I buy this device,
4 indeed it is compatible with the signaling system
5 that they're using.

6 It might also warn me that if I buy this
7 when I'm in L.A. and take it back and try to
8 operate it in San Francisco, it may not.

9 Is there any thought to such a
10 certification process for the benefit of the
11 consumer?

12 Those are my questions.

13 MR. EDGAR: The last part of your
14 question I guess I'll address first. I think it's
15 absolutely essential that the homeowner has
16 confidence that this product will do what they're
17 buying it to do.

18 And one of the things that, you know,
19 one of the opportunities -- is this still on?

20 (Pause.)

21 MR. EDGAR: I was saying that it's
22 essential that the product does what the
23 homeowners are purchasing it to do. And one of
24 the opportunities, I think, that's very clear and
25 present is the California Energy Commission. If

1 there is some kind of a symbol or a seal that's
2 developed that the State of California says this
3 product is going to do what we want it to do and
4 what we promise it will do.

5 Would you please remind me of the
6 previous part of your question?

7 MR. ABBOTT: Yes, the prior question was
8 related to insuring that there's enough
9 flexibility in the product, let's say to pose
10 another example, if I'm a critical peak pricing
11 customer and I know I'm going to be away next
12 week, all week, and generally speaking I'd like my
13 HVAC running to keep the humidity down, and that's
14 a problem where I live.

15 But if I hit a CPP event where it's \$1 a
16 kilowatt hour I'm perfectly content to have my
17 HVAC suspended for the duration. Just given the
18 cost of operating it, comfort isn't an issue.

19 Is that customer choice represented in
20 the specifications for the device as it's
21 envisioned? Is that an input the customer could
22 make and have assurance that this device, whether
23 he's home or not, will respond to the indication
24 that a CPP event is occurring and operate it
25 accordingly?

1 COMMISSIONER ROSENFELD: This is Art
2 Rosenfeld, again. Sure. I mean basically that's
3 what the word programmable communicating
4 thermostat means, is that it will presumably
5 arrive from Honeywell or White Rodgers or whatever
6 with default settings.

7 And they will guess, I suppose, what
8 they think the customer wants. My guess is that
9 the average customer will go for -- will be happy
10 with -- if I were writing the default I would say
11 that when the price hits 50 cents a kilowatt hour,
12 I want to go up 4 degrees, and maybe I want to go
13 up 4 degrees for every 50 cents a kilowatt hour.

14 So, that would be the default. But the
15 wealthy, I-don't-care customer might decide he
16 only wants to go up two degrees. And I think
17 that's all built into the concept.

18 I'm really not quite sure that I
19 understand your question.

20 MR. ABBOTT: It was really just the --
21 I'm trying to understand the dimensions or the
22 size of the choice envelope for the customer.

23 COMMISSIONER ROSENFELD: That's up to
24 the customer. It will give a default, but the
25 customer can do anything he or she pleases.

1 MR. ABBOTT: Right, --

2 COMMISSIONER ROSENFELD: Mazi is dying
3 to make a comment.

4 MR. SHIRAKH: There will be two types of
5 signals. One would be a price signal. And the
6 way we've envisioned this is that the customer
7 will have a choice to override; and presumably
8 they'll pay a penalty. But they can keep their
9 air conditioning going.

10 The second type of signal will be an
11 emergency signal where there could be a stage one,
12 two or three alert, and rolling blackouts are
13 imminent. In that case the customer will not have
14 a choice. But that's a very rare event, and we're
15 estimating that's one day in ten years.

16 The price signals are going to be more
17 common; and the customer will have a choice of
18 overriding it. We could also stipulate other
19 exemptions as we're finalizing the standards
20 language.

21 MR. ABBOTT: Thank you.

22 MR. HOFMANN: Okay, I think it's time we
23 break for lunch. We're running about 40 minutes
24 later than we had planned.

25 Originally we had set aside an hour and

1 a half because we were breaking at the lunch hour
2 and we thought there might be some conflict with
3 other people.

4 But the two restaurants across the
5 street are probably pretty empty at this point.
6 So we'd like to get back here no later than a
7 quarter to two, if that's do-able.

8 The people that are on the phone, we're
9 going to leave the system on. You can either
10 leave your system on or dial back in at a quarter
11 to two. At a quarter to two we will start the
12 utility panel, and then we will go to open
13 questions.

14 (Whereupon, at 12:39 p.m., the workshop
15 was adjourned, to reconvene at 1:45
16 p.m., this same day.)

17 --o0o--

1 AFTERNOON SESSION

2 1:50 p.m.

3 MR. HOFMANN: For you people at home,
4 we've muted your phones so that we can't hear you
5 for now. But after Terry's presentation this
6 afternoon we will unmute you and you can
7 participate in the question-and-answer period.

8 We'll get started in just a couple of
9 minutes. We're waiting for Commissioner Rosenfeld
10 to come back in. I just saw him in the hallway,
11 he'll be here in a second and then we'll get
12 started.

13 For those of you who have arrived just
14 this afternoon, --

15 (Off the record.)

16 MR. HOFMANN: For you at home and in the
17 audience here, we did realize that there were more
18 questions that wanted to be answered of the vendor
19 panel this morning and we had to cut it off at
20 12:40 so people could go to lunch.

21 And we hope that you remember your
22 questions, and that after the utility panel's
23 clarifying questions, Mazi Shirakh will then
24 facilitate an open public discussion on all the
25 topics of the day until 4:00.

1 So, at this point I would like to ask
2 the utility panel members to come forward. That's
3 Terry Mohn from San Diego Gas and Electric; Carlos
4 Haiad from Southern California Edison; and Tim
5 Vahlstrom from PG&E.

6 MR. HOFMANN: Missing a panel member
7 here; I know Carlos was here a moment ago. I
8 don't --

9 UNIDENTIFIED SPEAKER: He'll be right
10 here.

11 MR. HOFMANN: He'll be right here.
12 We'll just wait a second.

13 (Pause.)

14 MR. HOFMANN: For those of you that are
15 online, you are always able to submit your
16 questions into WebEx. And Tony Tully makes me
17 aware of what those questions are. And then I
18 will either ask you to ask them or ask them for
19 you when the appropriate time is.

20 Just submit questions here, that's where
21 you're suppose to, in the name of the user.
22 Carlos. Okay, I think we're all here.

23 So, this morning we heard from the
24 vendor community and it led to a very spirited
25 discussion, probably went a bit beyond the

1 clarifying state. But I think it was a very
2 useful discussion.

3 This afternoon we have a panel of
4 California's three investor-owned utilities. And
5 we will have a presentation from one member of our
6 panel, Terry Mohn, who represents San Diego Gas
7 and Electric, but will be speaking for all three
8 IOUs in the state.

9 Following Terry's presentation we will
10 again open this session up to clarifying questions
11 first. And then after that, Mazi will facilitate
12 an open public discussion to the end of the day.

13 So, Terry.

14 MR. MOHN: Thank you very much.
15 Appreciate the opportunity to have a conversation
16 here with fellows at the workshop.

17 I am very pleased to say that SDG&E is
18 in an enviable position to be able to represent
19 the opinions and views of the three IOUs here in
20 California.

21 We worked on these views for quite a
22 number of weeks and today is my opportunity to
23 explain what our views are on this concept.

24 So, I'm advancing the slide; the space
25 bar was pushed.

1 So, what I'm doing is I'm showing kind
2 of a list of people who were enlisted into this
3 process. You can see that we have a pretty broad
4 representation of various members of each of the
5 IOUs. But again I just wanted to emphasize the
6 fact that the opinions that we're going to put
7 forth here really are a joint effort, and we're
8 very happy of the fact that we could represent
9 that in a unified way.

10 (Pause.)

11 MR. MOHN: I've got four hands up here
12 now. What's the trick?

13 UNIDENTIFIED SPEAKER: I just put --

14 MR. MOHN: Control, Alt, Delete?

15 (Laughter.)

16 MR. MOHN: So the first statement that
17 we want to make is that absolutely the three
18 utilities agree that this is the right thing to be
19 doing. We're very supportive of not only this
20 particular program, but all the CEC's programs.

21 This one, developing standards, we
22 believe is necessary to deliver state reliability
23 objectives, and so we will collectively work on
24 them to try and achieve the timelines that are
25 requested.

1 One of the things that we want to bear
2 in mind that is always in our forefront of our
3 minds as we're thinking about developing programs
4 is within the utilities we have many many programs
5 we're working on.

6 And so this one, this particular
7 program, even though it's relatively new in the
8 course of history, is not new for us in the way we
9 supply a result or solution for this program, in
10 that we consider it with regard to all the other
11 programs that we're involved in.

12 And so, for those of you who know us in
13 the utilities, we're working on a very aggressive
14 program in AMI. And we're looking at how the PCT
15 program will coordinate with that. And also
16 potentially integrate with that.

17 And so later on in my talk today we'll
18 get into some of the issues around what we believe
19 to be, as a result of looking at PCT, or
20 programmable thermostats, in addition to some of
21 those other programs.

22 But then even beyond the programs that
23 are mandated for us, we also have just business
24 programs that we built internal where we have
25 customer outreach or perhaps even energy or

1 infrastructure efficiency type of programs. So we
2 look at how each one of these programs coordinates
3 with all of the other programs we're involved in.

4 What was that three-finger salute,
5 again?

6 (Pause.)

7 MR. MOHN: For those on the phone, we're
8 having difficulties with the slides. Okay, it's a
9 three-button sequence here.

10 So this slide is just a recap of the
11 program objectives that we saw earlier. And I
12 guess these are better typified by saying that
13 these are the PIER objectives. One of the things
14 that we need to keep in mind is, one of the things
15 that Ron talked about earlier today, PIER is
16 providing suggestions to CEC on how to achieve
17 their goals. And we want to make sure that as we
18 consider PIER's input into the process, that it is
19 one of many types of input. We want to consider
20 those, as well.

21 One of the things that we walked away
22 from at the last workshop was that some of those
23 suggestions appear to be approaching policy goals.
24 And what we wanted to do is just emphasize that
25 for the utilities we need to have a really clear

1 set of policies, possibly even clear definition of
2 requirements. But what we don't want to do is try
3 to work a solution or program around a design
4 that's being proposed by the regulators. What
5 we're really focused in on, what are the policies
6 that allow us to focus in on what are the designs.

7 And so there was possibly a mismatch in
8 our interpretation of one of the earlier
9 workshops. So today when we're talking about it,
10 we're going to really focus in on some of the
11 comments that were made by the manufacturers this
12 morning; and then, again, what our perspective is
13 on what are the policy goals.

14 So, one of the first views that we want
15 to represent is that collectively the utilities
16 don't view a uniform or universal communication
17 platform as being the best way to approach the
18 solution.

19 Keep in mind that an earlier comment
20 that I made, we have quite a number of programs
21 that we're trying to interoperate and integrate
22 together. And so each utility has kind of the
23 best way that it feels it can approach its
24 customers, and the best way to achieve value for
25 each of those programs for its customers.

1 And so what we believe is that each one
2 of us independently has a way to provide
3 communication system, and it may not be a single
4 universal communication system.

5 One of the things said by both the
6 manufacturers and by CEC this morning, PIER, was
7 that we really want to achieve an open market.
8 And the utilities totally believe in that, as
9 well. We believe that through defining the
10 requirements clearly and crisply for the
11 manufacturers that that market will be achieved;
12 and it will be open; and we'll have more
13 competition, which is good for the utilities, but
14 may not be good for a specific manufacturer. But
15 for us, we think this is a good thing. So we're
16 really looking forward to help foster that
17 openness.

18 There are a couple other things that
19 come into play as we start to provide a solution.
20 And that is how do you take the requirements and
21 turn that into a product. For those of you who
22 have been in the manufacturing process, you
23 understand that there is a product development
24 lifecycle.

25 What we need to do is start with a good

1 set of requirements. After those requirements
2 then the manufacturers or those that participate
3 in the market, they can design the products in a
4 way that adds flexibility and perhaps ways to
5 differentiate their products from other
6 manufacturers. So we want to provide that
7 capability so the manufacturers can achieve their
8 goals, as well.

9 But within the utilities base, we have
10 other opportunities for using these types of
11 devices, more than just the thermostats. And so
12 we want to be free to make those decisions and
13 explore those decisions. Such as grid reliability
14 and other programs that we choose to implement on
15 our own.

16 So we've said a number of times that AMI
17 is really a big program for all of us. Each of
18 us, each of the utilities has our own view about
19 how to approach the solutions, achieving the cost
20 benefits around AMI.

21 So, if we want to leverage that, what we
22 don't want to do is start looking at yet another
23 network that potentially may have to be managed by
24 the utility. If the proposal that PIER proposed
25 was that there's a one-way AM/FM solution as kind

1 of a default or lowest common denominator for all
2 thermostats, what it really boils down to to the
3 utilities is that it's one more network for us
4 manage. And we want to avoid additional costs
5 beyond those that we're already incurring. So we
6 don't see that as really a recommended course for
7 us. It's not one that we really would want to
8 approach.

9 We have existing technologies that could
10 conceivably provide this communication link. We
11 have private data radio networks. We have -- some
12 of us are putting two-way communications that are
13 capable of supplying a signal into the home. We
14 wanted to have the opportunity of using and
15 leveraging that.

16 But each of us has our own business case
17 for how that's going to be achieved. And so to
18 think about if a signal was issued statewide by
19 one individual or by one organization, such as
20 Cal-ISO, that ultimately ended up in our service
21 territory, we are the first course of recourse
22 that the customer would go to if there were a
23 problem.

24 And so the question I would ask is if
25 there was only one initiator of the signal, who's

1 the customer-support group for that signal? Is it
2 going to be Cal-ISO? Well, I really don't think
3 so. I think it's going to be the utility.

4 And so really the onus of responsibility
5 for issuing that signal is at the utilities, at
6 their discretion. Even though the utility is a
7 recipient of a pricing signal coming from Cal-ISO,
8 it doesn't seem appropriate that Cal-ISO should
9 directly send a signal to the customer.

10 So, our proposal is this. If a pricing
11 signal does need to be sent, it's sent directly to
12 the utility. At our discretion, at the utility's
13 discretion, based on whatever programs and plans
14 that we have in place, and justifications, we can
15 choose to send the signal to the customer using
16 our network, or choose not to. But that's our
17 discretion. We are ultimately responsible for the
18 response and the behavior as a result of that
19 signal reaching the customers' site.

20 That's to say that's how we deal with
21 looking at a single point of initiation. Still
22 what we want to do is achieve the goal set out by
23 the PCT request for Title 24. We definitely do
24 want to provide the requirements necessary so the
25 manufacturers can make those products. And so

1 we're committing to do that.

2 Later on I'll talk about what our
3 timeline is, but right now, it's really a great
4 thing that the three utilities have decided to get
5 together and commonly come together with a set of
6 requirements that can be uniformly applied within
7 the California area.

8 Our next step is to finalize the
9 requirements that achieve the goals of our
10 individual utilities. We want to finalize those
11 and then send them off for public debate. And
12 that's what we're going to do.

13 So, just in closing I want to say that
14 we realize that there is a real tight schedule.
15 We, as the joint utilities, will abide by that
16 schedule as closely as we can.

17 We're also, we recognize that there's a
18 huge number of folks that have a vested interest
19 in the outcome of this. And so once we solidify
20 our requirements internally, we're going to open
21 it up for public communication. We're going to
22 provide access to the public for comment on our
23 requirements, the options that we're proposing.
24 And the risks that each of us, as stakeholders,
25 will incur.

1 Our schedule is that later this month
2 the three utilities will be meeting together to
3 begin the plan for how we're going to achieve
4 requirements definition according to the schedule
5 that's been laid out by the CEC.

6 So we know within the next two quarters
7 or three quarters that we have a lot to do. But
8 that's what we're signing up for.

9 And that's the end of my presentation.
10 Did you want to have some clarifying questions?

11 MR. HOFMANN: Yeah. I think you can
12 direct your questions to all three of our panel
13 members, and I also want to tell you that sitting
14 up here on the front of the stage is a written
15 version of Terry's remarks. And we have about 40
16 copies here, so people who would like to pick one
17 up are welcome to do that. We're also planning to
18 post this document with the presentations.

19 So, are there any clarifying questions
20 before we get to open discussion? And Tony's
21 opening up the microphone for the people on the
22 phone.

23 Lunch has slowed you down.

24 (Laughter.)

25 MR. HOFMANN: Mazi.

1 MR. SHIRAKH: I'm not clear what your
2 proposal, we want a PCT that works everywhere in
3 the state. You mentioned that you want to have
4 control over the PCT operation within your service
5 territories.

6 I would think it's practical for the
7 manufacturers to make PCTs that are designed to
8 work within a certain utility territory. I mean,
9 if this proposal goes nationwide, then you're
10 talking about 200 different versions.

11 So, what do you propose, as far as the
12 technological solution, that makes it easy for
13 manufacturers to come up with universal device,
14 but it's cost effective and all that, yet gives
15 you the tools to do what you need within your
16 service territory. That's number one.

17 Number two, you mentioned you're against
18 AM/FM receiver. Why would you be opposed to that
19 idea if it is there as a default, but yet you
20 still have the flexibility to implement your own
21 AMI program. Why would you be categorically
22 opposed to an AM receiver?

23 MR. HAIAD: This is Carlos, Southern
24 California Edison. On the universal device one
25 vision would be that the manufacturer would only

1 provide a backbone, a thermostat that could be
2 sold anywhere in the state. In fact, had no
3 communication to it, and each utility would
4 deliver the communication piece that would
5 communicate with its customers.

6 So, in essence, the manufacturer would
7 provide a backbone and each utility would leverage
8 the, call it the USB port or a communication link
9 to deliver the communication that would best match
10 their AMI infrastructure.

11 That is one possible vision of how you
12 can buy that backbone anywhere up and down the
13 state; you can put on the wall. It works as a
14 thermostat regardless. And then for each of the
15 utilities they could deliver the communication to
16 their customers that would best match their AMI
17 infrastructure.

18 Now, we haven't explored all the
19 variations on that theme. That is the goal in the
20 next few months, to see how practical this would
21 be. So that's one piece.

22 I'm not prepared to tell you right now
23 that that's fully cost effective or not. But from
24 the manufacturer the idea would be they are
25 delivering the same thing regardless, from their

1 perspective, you know, would be an easy path for
2 them.

3 In terms of integrating some
4 communication in this particular case that
5 proposes a one-way AM/FM into that backbone, view
6 is that you are leaving that asset in there for no
7 reason. Because at least within Edison's service
8 territory, we wouldn't use that at all. We want
9 the two-way communication piece. It adds
10 tremendous volume to us to have the two-way
11 communication, as it does, I believe, for the
12 other utilities.

13 So, yes, and it's to be seen if it is,
14 in fact, you know, a \$3 or \$5 add-on, or a \$50
15 add-on to the device. And the infrastructure
16 needed to have that AM/FM device incorporated into
17 the thermostat, you know, having a receiver that
18 can receive the AM/FM radio signal is one cost.
19 But you still need an infrastructure to
20 communicate to it.

21 And I don't know the cost of that
22 infrastructure today. We are looking for Ron to
23 provide some of that feedback as we move along on
24 the process.

25 But for us we would have that asset in

1 there, and from day one we wouldn't use it, so why
2 have it. That's why we are opposed to the one-
3 way. Not necessarily one-way AM/FM, but in
4 essence, one-way.

5 MR. SHIRAKH: So, let's, for the sake of
6 argument, assume that the AM/FM only cost a couple
7 of bucks, \$3, you know, relatively minor. Yet the
8 thermostat will come with this expansion port that
9 will give you your two-way communication and
10 everything else you want. Would you still be
11 opposed to that?

12 The reason is not all of the state is
13 covered by IOUs; there's about 30 percent of the
14 state that is not. SMUD, LADWP and others. And
15 they may wish to use the one-way communication,
16 and we'll be denying them the opportunity.

17 MR. HAIAD: Well, they would have to do
18 their own business case to see if one-way or two-
19 way would be good or bad for them. I don't know
20 that. I mean, one-way may not work for them,
21 either.

22 But there is also nothing to prevent
23 them to deliver their customers their USB device
24 or whatever communication device that would talk
25 to their own infrastructure. I mean I don't know

1 that.

2 I mean, you are assuming that they
3 wouldn't have an infrastructure at all; you would
4 rely on the AM/FM. And that may be true; that may
5 not be true.

6 We never really asked the manufacturers
7 and I see three of them, the two here and a third
8 one, if they have any problem with the AM/FM
9 vision, you know. I'd like to have that question
10 posed later on to them. I don't know. They may
11 have no problem at all, you know. I don't know
12 that.

13 MR. VAHLSTROM: Not really, but I'll say
14 something anyway. Tim Vahlstrom, PG&E. I'm not
15 sure there's an opposition from a technical
16 standpoint of including AM/FM as an alternative.
17 But I certainly agree with Carlos, it's an
18 additional cost that may or may not be utilized.

19 And since our customers would be bearing
20 those costs somewhere in society, someone has to
21 make a different kind of a policy decision,
22 because it certainly wouldn't be part of our
23 business case unless the companies' programs were
24 to purchase devices and provide them to customers.
25 Then we have to buy a more expensive device to

1 deliver what may already be deliverable at a lower
2 cost if it didn't have that feature set.

3 I think secondarily I'm not sure that
4 the assumption that manufacturers don't tailor
5 products to geographic and cultural distinctions
6 is a true one. Meter panels across the United
7 States are not equal. You cannot buy the same
8 panel in perhaps one other utility's service
9 territory's Home Depot that you can in PG&E's
10 because the electrical contractors who work in
11 PG&E's territory know what PG&E's standards are;
12 therefore the stores stock the thing that they
13 buy; therefore they match.

14 We don't have a panel right now, I'm
15 confident, that Florida Power and Light uses in
16 any of our Home Depots in PG&E's service
17 territory. That said, it doesn't mean that the
18 meter panel manufacturers don't make two different
19 panels and have trouble with that; don't want to
20 meet the market needs of their customers.

21 So, I think California is a pretty
22 unique and broad state. And one of the things I
23 guess I also want to say is even FM and AM is not
24 ubiquitous in all areas. And making sure that you
25 have connectivity to every home is also a primary

1 concern of the utility. And to choose a strategy
2 that best suits, and it might be geographically
3 tailored, it might be, in some ways ubiquitous,
4 great. If it's not, we still need the flexibility
5 to tailor.

6 So, I guess some of premises we're using
7 I guess I would love us to test, that you can't
8 actually have a northern California standard that
9 basically works for everything for PG&E's 5
10 million customers. That's a pretty broad market,
11 and most manufacturers would not have a
12 significant problem if all they were doing was
13 manufacturing something that actually had the
14 communications board onboard to suit a territory.

15 Because basically we might be using the
16 exact same thermostat as SCE or Sempra, but they
17 have to have the seal for California PG&E service
18 territory, it has a certain communications board
19 built into it.

20 I don't think that's a really
21 significant high hurdle for the manufacturing
22 community.

23 MR. MOHN: Terry Mohn, again, Sempra
24 Energy. For us there are a couple issues and this
25 is one that I brought up in the first part of my

1 talk.

2 We're talking about adding another layer
3 of networking for us on our service territory to
4 support any sort of one-way, or any other non-
5 Semptra-type network.

6 So, first of all, we would have to incur
7 additional support costs for a second network.
8 But I think even moreso than that, the biggest
9 concern is for those of you who have heard about
10 in the early days of radio where anybody could get
11 a transmitter and send a signal to their
12 neighborhood.

13 As you think through what's available
14 today, electronics are very very inexpensive. And
15 the likelihood that somebody could randomly put a
16 generator or a transmitter in the back of their
17 truck and drive up and down the streets just for
18 the heck of it turning on and off thermostats
19 scares the heck out of us.

20 What we would want to do is have really
21 tight control over the signaling that actually
22 goes to the customer's home.

23 MR. HOFMANN: Any other questions?

24 MR. EIGENBROD: My name's Ron Eigenbrod
25 and I'm with LightStat; we're a vendor. Right now

1 what exists for the demand response industry is
2 driven by the utilities. And the utilities set a
3 criteria, put it out for bid and the vendors are,
4 you know, responding accordingly. Both Honeywell
5 and White Rodgers are, you know, major players in
6 that arena.

7 The utility also has a vested interest
8 in its particular customer base. And becomes
9 really the provider of service of last resort if
10 there's a problem; eventually somebody's going to
11 take care of it.

12 And I would just wonder if the CEC PCT
13 initiative might present a problem down the road
14 where there are issues that can't be resolved by
15 the local HVAC contractor, the manufacturer will
16 back their equipment. But, of course, this is
17 being sold through different channels.

18 And it just kind of makes some sense
19 that the utilities have a little more
20 responsibility and participation in the delivery
21 of the demand response.

22 And perhaps the panel would care to
23 comment on that.

24 MR. HAIAD: This is Carlos again. Let's
25 see if I understood the question. Either it was

1 already in the home because it was a brand new
2 home, or the customer did a major retrofit and a
3 PCT was there. Or he just went to Home Depot and
4 bought a PCT.

5 And I'm assuming that we are talking
6 about the Home Depot that the guy went there and
7 bought the PCT. And two days later the device is
8 not working. And it might not be working because
9 the lighting that indicates that an event is
10 occurring is always on, as opposed to not being
11 working because the air conditioning is not
12 getting heating or cooling the home.

13 I would envision a scenario in which,
14 if, in fact, what he's really -- if I understood
15 what he's really saying, there is a problem with
16 the -- potentially a problem with the
17 communication path of this. Not on the workings
18 of the thermostat controlling the air
19 conditioning. That I would put back directly on
20 the contractor's lap.

21 But if that little blue light stays on
22 indicating something that is not occurring, a
23 possible solution for this would be, in fact, that
24 the person that it at that Home Depot would take
25 it back to Home Depot. And what is the impact on

1 that.

2 Well, I would say that if, in fact, the
3 communication is by utility, the utility would
4 have approved that vendor and that product by that
5 vendor that would say, you know, model XYZ from
6 LightStat or Honeywell or, you know, White Rodgers
7 or Carrier or VenStar, whoever are the player,
8 works within my infrastructure. We test it, we
9 had that approved and it should work.

10 If it is not working on the
11 communication piece path, the customer should be
12 able to go back to Home Depot and return it and
13 get a new one. Because by definition, the device
14 should work with our infrastructure. By
15 definition. If it is one of them, my customer,
16 and he bought a product that we tested as having
17 the conductivity to my infrastructure should
18 work. So, I, you know, by definition it
19 should work.

20 If it is a problem in controlling the
21 air conditioning, then, you know, you got to go to
22 the contractor. He would take back like he would
23 take back any air conditioning, any thermostat.

24 If it is a new construction he goes back
25 to the developer. If it is a major retrofit he

1 goes back to the guy that did the major retrofit.
2 So, I really -- I see the utility having some play
3 in almost approving that device as having
4 conductivity to its infrastructure. But beyond
5 that, you know, it's just the marketplace; is a
6 product that is being sold

7 And in the communication we may have, I
8 don't want to call seal of approval, but we may
9 have, you know, the vendor may list the utilities
10 that his product has been approved, and is on the
11 packaging. And the customer goes to Home Depot
12 and he reads there, yeah, it works with LADWP.
13 Okay, I can buy it; put on my wall because I pay
14 my bill to LADWP.

15 Or yeah, he works on Southern California
16 Edison's service territory. Okay, I can put in
17 Palm Springs and it will work.

18 So, that's the general vision here.

19 MR. HOFMANN: Any other comments from
20 the panel?

21 MR. BOLAND: My name is Rick Boland; I'm
22 with e-Radio USA. And we're a service provider in
23 the area of radio datacasting using FM radio
24 signals to send a variety of security-encrypted data
25 to devices in cars primarily.

1 My question for the panel is you've
2 talked about having to add yet another network to
3 manage and operate and incur the costs. Would you
4 be opposed to having a service provider operate
5 that network where you send a feed to someone like
6 us and we distribute to your customer base for
7 you?

8 MR. MOHN: Our first area of focus right
9 now is to finding the requirements for what we
10 want the interfaces to be within the PCT. After
11 that I think that vendors will come up with very
12 imaginative ways of solving the interface problem.

13 It may be that solutions such as a
14 hosted service is appropriate. But right now
15 we're not focusing in on the actual implementation
16 or design. We really want to focus in on the
17 normal process and product development, which, at
18 least from our perspective, is we still need to
19 clarify the requirements before we fine develop
20 it.

21 MR. HOFMANN: Anybody else on the panel?

22 MR. VAHLSTROM: Just to echo a little
23 bit. I believe each of the utilities uses, in
24 this business case, studies. Of anything that it
25 studies, once it knows what the requirements are,

1 you know, once it knows what the alternatives are,
2 what the strengths and weaknesses of each of those
3 alternatives are, including their risks, their
4 costs their functionalities, and makes hopefully
5 the wisest choice that supports its business
6 needs, the requirements and their customers.

7 So there's nothing out of hand that
8 would have been excluded in that analysis. But it
9 would be, if there was AMI systems in place, and
10 utilities, that would put a significant challenge
11 for a business case to parrot, or to overrule an
12 existing system.

13 It depends on what's first; it depends
14 on what's in place; it's depends on what's in
15 play.

16 So I guess out of hand I wouldn't say,
17 to answer your question, no, PG&E would have never
18 just said exclude all technologies or some
19 technologies or hosted technologies as not even in
20 consideration.

21 But I would say that once the
22 requirements were known it would be a clear -- it
23 would be easier to identify who the players are
24 that can meet those requirements, and then compare
25 all the reasonable options you have. And then you

1 compare their strengths, their weaknesses, their
2 risks, the functionalities and the benefits to the
3 customer. And then you choose the best one. And
4 in the AMI systems in place, in many cases that AMI
5 system will have some economic and risk advantages
6 because it's proven and in place and here are no
7 more costs.

8 MR. HOFMANN: Anybody else? You portray
9 this as a joint utility effort. Is there a single
10 point of contact or a single point of interface to
11 you as group.

12 MR. HAIAD: We will, before the end of
13 this month have that single point of contact. And
14 in fact, that's one of the items on the agenda
15 that was mentioned earlier on the presentation.
16 So give us another week and a half and we'll have
17 that settled.

18 MR. HOFMANN: Anybody else?

19 MR. KOSKOWICH: Well, potentially one
20 more question.

21 MR. HOFMANN: Go ahead.

22 MR. KOSKOWICH: This is Cal Koskovich
23 speaking from up north in Alberta. Do the
24 utilities see themselves as another sort of
25 approving level between what the electronics

1 device organizations would do and data broadcast
2 regulators that already look after who can
3 actually transmit from given areas in California?

4 MR. MOHN: I'll try to repeat what I
5 think I heard. I think I heard the caller ask
6 whether the utilities would be an approval body to
7 the type of communication link into the home. Is
8 that the question?

9 MR. KOSKOWICH: That's what I'm trying
10 to understand from Carlos' comments about whether
11 the utility would be giving their stamp of
12 approval to sell a thermostat in -- Home Depot.

13 MR. MOHN: Well, I can speak for San
14 Diego Gas and Electric that we would certainly
15 want to approve all devices that we would
16 ultimately one day service, even as they are going
17 into new construction. It seems to me that the
18 call of first defense for the customer is the
19 utility. So we would certainly need to understand
20 what the customers placed in their home.

21 MR. KOSKOWICH: Do the utilities support
22 thermostats right now?

23 MR. HAIAD: Could you repeat? Does the
24 utility test right now?

25 MR. KOSKOWICH: No. Do they actually

1 support thermostats in customers' homes right now?

2 MR. HAIAD: No, I mean if I understood
3 the question if we approve thermostats today. The
4 answer is no. And the answer is now because today
5 the thermostats have no connectivity to the
6 utilities whatsoever, excepting some pilots that
7 we have done. But, you know, as a regular
8 business model, no, we don't approve anything.

9 MR. KOSKOWICH: So this would become a
10 whole bunch of new work for the utilities to look
11 after the --

12 MR. HAIAD: Well, again, you know, the
13 approval would have to do mostly with the
14 communication, with the connectivity to the
15 thermostat. If, in fact, the model hat I very
16 briefly threw out, is using each utility's
17 communication infrastructure based on their
18 specific AMI, then yes.

19 I mean I like to make sure that I have
20 connectivity to those thermostats. Remember not
21 only for economic reasons, but also for
22 reliability reasons, I have to have that
23 connectivity. I have to have some certainty that
24 it's working and will work.

25 So, in that sense, yes, if the business

1 model is that each utility would leverage their
2 AMI infrastructure to get to the thermostat, I
3 better make sure that I can get to the thermostat.

4 MR. KOSKOWICH: And so the utilities
5 want to stand between the ISO and the customer?

6 MR. HAIAD: Yes. In fact, we are.

7 MR. KOSKOWICH: Okay.

8 MR. HAIAD: Okay.

9 MR. HOFMANN: Ron, I think you were
10 next.

11 MR. EIGENBROD: Yeah, Ron Eigenbrod with
12 LightStat. As I understand it, the CEC is looking
13 for a new installation only, one-way thermostat.
14 What I understand from the panel is that this
15 should be a two-way thermostat. And would this
16 also possibly be a retrofit, you know, for your
17 particular service territory? Would you care to
18 comment on that?

19 MR. HAIAD: From Edison's point of view,
20 yes, it's two-way. And I believe we are not yet
21 comfortable with the one-way AM/FM solution, if I
22 can call it solution -- idea.

23 So, yes, from Edison's perspective it
24 has to be two-way, it's a two-way or nothing type
25 of deal.

1 I believe is the vision of the CEC that
2 even though it's new construction, it's open, I
3 think, for 2008, if we also include retrofit.
4 That may be postponed to 2011. I don't know if
5 they have resolved that.

6 But, you know, you can write the code
7 such if you touch anything on that air
8 conditioning system would require the change of
9 the thermostat. You could say, you did a duct
10 sealing would require the change of the
11 thermostat. I mean that's just a question of
12 writing into the code.

13 You would have to make a case that it's
14 cost effective, but, yeah, it could be major
15 retrofit, minor retrofit and new construction,
16 sure.

17 MR. EIGENBROD: The retrofit I was
18 referring to would be going through the entire
19 customer base and say, we would like to implement
20 this technology, not just limit it to a new
21 construction.

22 MR. HAIAD: Okay. It is not totally out
23 of consideration that Edison, like the other
24 utilities, would have demand response programs.
25 And we would, under that scenario, purchase the

1 device and deploy the device a we do today with
2 our AC cycling switches and, you know. So, yes.

3 I don't want to throw big numbers here,
4 but that is even some business case internal, it's
5 fairly aggressive, the numbers are fairly
6 aggressive. That we would, in fact, deploy the
7 thermostat.

8 Again, would be this case the thermostat
9 that would talk to our AMI infrastructure and will
10 leverage that infrastructure is the communication,
11 the connectivity to the thermostat.

12 So a potential vision of this discussion
13 would be the thermostat would talk to the meter;
14 and then through the meter I would talk to the
15 thermostat and I would leverage my infrastructure
16 to talk to the meter to get to the thermostat.
17 That's a possible vision; it's not a solution at
18 this point whatsoever.

19 But we know we have to put the
20 infrastructure in there to have connectivity to
21 the meter. So why not leverage that
22 infrastructure and just let the thermostat have to
23 talk just to the meter, you know, within the
24 premises of the house or the building.

25 I'm not saying this is a solution. We

1 haven't arrived to that solution at all. It's
2 just an idea.

3 MR. HOFMANN: Karen.

4 MS. HERTER: Hi, I'm Karen Herter, and
5 I'm a researcher at Lawrence Berkeley National
6 Laboratory; and I've been working at the Energy
7 Commission for five years on contract.

8 And I have a quick question. One of the
9 earlier callers asked about the two degree set-up,
10 to which Mazi replied, oh, well, now it's four
11 degrees. And then a little later on Commissioner
12 Rosenfeld said something about, well, customers
13 will be able to set up their thermostat by either
14 two or four degrees or zero degrees, if that's
15 what they choose.

16 So I'd like a little clarification on
17 what is it the customers will actually be able to
18 do based on the existing specification.

19 MR. HAIAD: Based on the existing
20 specification is my interpretation that under a
21 reliability based dispatch the customer won't be
22 able to do anything, all right. It's sort of
23 rolling our, or two degrees or four degrees,
24 whatever might be needed.

25 Our experience at Edison has shown for

1 small commercial where we have a fair amount of
2 expertise, four degrees is sort of an optimal
3 allowance between getting enough load and not
4 disrupting the business.

5 Okay, so four degrees, it's almost the
6 same as a 50 percent cycle. Okay. It gets a
7 little bit deeper or more at the front end, first
8 30 minutes, but we lose a little bit on the second
9 30 minutes of the hour, but, you know, it's almost
10 like a 50 percent cycling over the hour. So
11 that's where the four degrees came to be for us.

12 So under a reliability scenario, you
13 have a problem in the grid and you need to
14 dispatch some load because we didn't have any
15 choice, under economic dispatch the customer has
16 fundamentally two choices. One is he may not sign
17 up for a program. Under an economic dispatch with
18 a utility he would have to sign up for a program.

19 Under a CPP, which is using a rate that
20 it costs him more money, he has, as Art said, full
21 choice. At that point either he pays or he does
22 something. He may decide, hey, a buck and a half,
23 I can afford this, no problem. Or he decides that
24 I will do the four degrees or eight degrees, or I
25 just go there and turn off. Just put on the off

1 position.

2 If he has signed up for a program with
3 the utility, in all cases here, except for the
4 reliability again, that is the override button.
5 The customer, you know, if the utility, under a
6 economic dispatch scenario, decide to put four
7 degrees or two degrees or ten degrees, the
8 customer -- at least this is our vision -- would
9 have that override button, because it's not
10 reliability, it's economic. So if he is willing
11 to pay or not get the benefit, you know, the
12 discount on the bill, he should have the choice of
13 practicing the override and say, hey, it's more
14 important to me today to have comfort than this.

15 That's how I understand the process is
16 today. Maybe Mazi or Art could elaborate, but
17 that's how I envision this happening.

18 MS. HERTER: So you envision that the
19 customer will be given the option of a two-degree
20 increase on a CPP rate?

21 MR. HAIAD: Yes.

22 MS. HERTER: Okay.

23 MR. HAIAD: I mean -- yes, yes.

24 MR. SHIRAKH: But there is a cost to --

25 MR. HAIAD: Yes, there is a cost,

1 absolutely, sure. Sure. Is a tradeoff. He wants
2 more comfort, it will cost him more, I mean. But
3 it's his choice. You know, yeah, absolutely.

4 COMMISSIONER ROSENFELD: This is Art.
5 Karen, I don't know whether there's a problem here
6 or not. Are you happy with Carlos' response?

7 MS. HERTER: Yes.

8 COMMISSIONER ROSENFELD: Oh, okay. So I
9 think we got --

10 MS. HERTER: That's all I wanted.

11 COMMISSIONER ROSENFELD: I think we got
12 that problem solved, okay.

13 MR. HOFMANN: Next question, Subra.

14 DR. SUBRAHMANYAM: Hi. I don't know if
15 this is the right time to ask this, or whether
16 it's in Mazi's open discussion, I guess that's --

17 UNIDENTIFIED SPEAKER: Identify
18 yourself, please.

19 DR. SUBRAHMANYAM: My name is
20 Subrahmanyam. I'm with CyberKnowledge; I also
21 work with UC Berkeley wireless center.

22 The question I had was purely as an
23 observer. It would seem that there's maybe some
24 benefit to clarifying maybe two somewhat opposing
25 perspectives that I think are here.

1 One is from, you know, both what Mazi
2 said as well as from a vendor's perspective, it
3 might be beneficial to have sort of a universally
4 portable device, whether this is a thermostat or
5 something else.

6 Whereas, the utility perspective seems
7 to be that it might be better to have a utility
8 tailored widget, whatever that might be.

9 So, is this a fundamental sort of
10 sticking point, or perhaps could you clarify this,
11 or amplify on the potential?

12 MR. HAIAD: I don't think what I'm going
13 to say here is secret, but having a device that is
14 two-way communicating capable adds to our AMI
15 business case a fair amount of money. I mean it's
16 not trivial. So, that's one of the reasons why we
17 are opposed to one-way.

18 I can also say that on the device,
19 itself, I don't believe there is a cost difference
20 between one-way or two-way; is the infrastructure
21 where the difference between one-way and two-way
22 might be.

23 From the other workshops that I
24 participate, it seems that having a device with a
25 one-way receiver, or a receiver and transmitter to

1 give you the two-way capability, there is no real
2 cost difference on the big scheme of things.

3 But the communication infrastructure to
4 support one-way or two-way is where I'm being told
5 there is a significant cost difference. This is
6 one of the things that we would explore.

7 But keep in mind, if the utility is
8 paying for the AMI infrastructure, and that
9 infrastructure is two-way, why not leverage it. I
10 mean, you know.

11 DR. SUBRAHMANYAM: Sure. I think your
12 point is well taken. I guess my question was a
13 little more abstract. I certainly agree that two-
14 way is, you know, beneficial.

15 But the broader question was should
16 these devices be specific to the region of a
17 utility, or, you know, universal across the state,
18 or perhaps even larger, I guess.

19 MR. HAIAD: Well, I guess is
20 philosophical. The question is who is going to
21 deploy the signal to target those devices. And it
22 is true that from my perspective, under a
23 reliability scenario, would be the individual
24 utilities. Somebody would have to make a -- and
25 I'm open for that. But somebody would have to

1 make a nice case to me that anybody else is better
2 position than the utilities to deal with, you
3 know, a reliability problem within their own
4 service territory.

5 Under the economic scenario, that's
6 broader. I could accept that a signal could come
7 totally from a third party. That's absolutely
8 quite possible. Because now, you know, it's not
9 like you pay it if you can afford it, the lights
10 would still be on.

11 So, it's unclear, again, if the
12 utilities are already paying for that
13 infrastructure, having a third party pay for
14 parallel infrastructure to give that statewide
15 possibly, giving the statewide, you know, with
16 some low orbit satellite or some other technology.

17 You know, as was said before, if pencils
18 out on the business cases, why wouldn't the
19 utilities go for it if it makes good business
20 sense. It's not no, no matter what, I mean,
21 that's not the case.

22 MR. HOFMANN: This will be the last
23 question of this session, then we'll have Mazi
24 facilitate a more general public discussion. And
25 that'll be Ray Bell.

1 MR. BELL: Hi. This is Ray Bell with
2 Grid Networks. My question is we've been talking
3 about the thermostat and the commonality in the
4 thermostat. The residential air conditioning
5 represents roughly half the load, you know, and we
6 have these peak moments and CPP. And the other
7 half is coming from commercial/industrial.

8 So my question is more is are you
9 looking at, what you look at when you go through
10 your requirements, a common language to send a
11 signal to the commercial building, as well as the
12 residential building? A lot of those systems
13 might be in languages like BackNet networks, or
14 others.

15 MR. HAIAD: Well, the main target of the
16 PCT at this point is residential and small
17 commercial. The small commercial here meaning
18 packaged air conditioning.

19 So even though I can accept, you know, a
20 Target Store may have 20 packages air conditioning
21 units, and they do have an EMS vendor that is
22 BackNet compliant, at this point it would be a non
23 BackNet connectivity to that thermostat.

24 But that is another effort going on that
25 would talk to the EMS vendor of the EMS system on

1 the customer's side, to do the same concept; some
2 resets and global reset of some kind.

3 Again, BackNet only address the
4 connectivity within the building. You still have
5 to get to the building. The connectivity from,
6 you know, the utility or a third party to the
7 building is not yet fully addressed by BackNet.

8 MR. BELL: Right, I think my question
9 was more do you envision a common message or
10 common language, whether you're sending it to the
11 thermostat over your communications network or to
12 some other control device over some other system?

13 MR. HAIAD: Right now the answer would
14 be yes. It needs to be seen if technically that
15 all works out, but the answer would be yes.

16 MR. HOFMANN: We've got more questions
17 online that came on right at the end here. Would
18 one of those requestors like to do it over the
19 phone, ask your question over the phone?

20 (Pause.)

21 MR. HOFMANN: No? Okay, I guess -- no,
22 they didn't put it on there, they just -- okay, so
23 I guess we'll move on to the next phase here.

24 I've asked the two vendors that were in
25 the panel in the morning to join us up on the

1 stage. And then Mazi's going to give a brief
2 introduction. And then we're going to have a
3 facilitated public discussion.

4 (Pause.)

5 MR. SHIRAKH: Okay, so we're moving on
6 to our last segment, which is the open discussion.
7 And this is your opportunity to ask questions from
8 any of the panel members, any issues that's still
9 on your mind.

10 What's up on the screen is, should have
11 said draft Energy Commission measure. Came up
12 with this based on a 30-second conversation with
13 Commissioner Rosenfeld before lunch. It's a
14 living topic.

15 Should have probably one more here, one
16 more bullet, and that's the capability for new
17 local control, service territory control.

18 Can -- people on the web cannot see
19 this, can they?

20 MR. TULLY: Yes, they can.

21 MR. SHIRAKH: Okay. So basically what
22 we're looking for, this is what the Energy
23 Commission would hope that PCT or the device --
24 doesn't have to be PCT, I guess, if we go with
25 Honeywell's vision -- must be a statewide system

1 that works anywhere in the state, any service
2 territory. You can buy it from any retail store
3 and use it anywhere in the state.

4 Must be plug-and-play. Basically that
5 means the homeowner or the contractor, after they
6 install it, it should be fairly simple to set it
7 up and get it going.

8 Must be independent of OEM and retail
9 channels. Again, you can buy it from anywhere or
10 any manufacturer and it should work with any
11 system. Must be user-friendly for contractors and
12 occupants. Same concept.

13 It should incorporate the interfaces
14 that was in Ron's vision, the four interfaces that
15 we talked about earlier, was on the board.

16 Preferably it should meet the Title 24
17 time tables.

18 So those are the things that we'd like
19 to see this system would look like.

20 I'd like to start off by asking one
21 question from the panel, myself. Basically this
22 is directed to the utilities. Now, Honeywell has
23 this vision up there. During your presentation we
24 talked about the PCTs. You guys talked about
25 PCTs.

1 Honeywell is suggesting that it doesn't
2 necessarily have to be PCTs, it could be any other
3 component within the system. It could be, you
4 know, the board on the compressor, it could be
5 your toaster, I don't know. How does that match
6 with your vision of the utilities'? What do you
7 think about that idea? Does that work with what
8 your goals are?

9 MR. VAHLSTROM: Tim Vahlstrom, PG&E.
10 I'm not sure that disturbs me a lot. What I think
11 I heard him say is what's the entry point of
12 communication signals into the HVAC system.

13 And it's really been PG&E's, and I think
14 others', is when you have communications inside a
15 home there's going to be something that will
16 provide either the hub of those communications, as
17 in the meter for the AIM process in Southern
18 California Edison, or signals can go directly to
19 end-use devices. I don't think there's anything
20 magic in our view about getting the signal
21 directly to the thermostat from the outside world.

22 But a place of entry has to be selected,
23 or a compatibility so that no matter what the
24 point of entry, it can get to the right point,
25 which might end up being the thermostat in all

1 cases.

2 So, if there's a short-hop system,
3 internal on a power line carrier, and x.10,
4 RadioShack, I don't care, that's inside the
5 homeowner's system that gets a signal from the
6 meter to the thermostat, whether that's what was
7 mentioned before, ZigBee, that goes from the meter
8 to the thermostat, or some power line carrier from
9 the meter to the thermostat, or from another
10 device, the compressor to the thermostat, I'm not
11 sure that's really something that PG&E would be
12 opposed to any of those solutions.

13 As long as the functionality, in the end
14 of the day, can be accomplished by the customer
15 and the utility, by either getting the controls
16 that the CEC and the state need accomplished at
17 the thermostat, or from the system as a whole, and
18 that the reliability issues can be addressed by
19 the utility.

20 So, no, I think PG&E is okay with that
21 vision. It's just that I don't think the
22 decision's been made what the point of entry
23 either has to be, or what the network inside the
24 home has to look like. So no matter what you
25 choose your point of entry, it will work.

1 MR. MOHN: I agree with that statement.
2 This is Terry with SDG&E. It really doesn't
3 matter where the signal ends up as long as all the
4 pieces can interoperate.

5 What we want to do as a utility is
6 define what the system requirements are, and then
7 let innovation flourish from the manufacturers.
8 Let them come up with the design set to meet our
9 requirements, and have the best cost
10 justifications.

11 MR. HAIAD: I also don't have any
12 problem, but I also understand that the thermostat
13 is the one that is best connected to the air
14 conditioning system. So, sort of would be the
15 first place to look, but not the only place to
16 look.

17 But, yeah, I don't have any problem,
18 especially if we want to communicate with other
19 devices besides the air conditioning. There may
20 be, in fact, a better place to be the gateway into
21 the building. But, you know, if the sole goal is
22 the air conditioning, the thermostat is for sure
23 the first place to look, but not the only place.

24 MR. SHIRAKH: It's good to know that we
25 all agree on that point, then. Commissioner

1 Rosenfeld.

2 COMMISSIONER ROSENFELD: Hi, this is Art
3 Rosenfeld, again. Mazi, I like the idea of a
4 provisional vision. The whole idea is to get a
5 vision of some functionality which everybody's
6 comfortable with.

7 So, I just want to say, from my personal
8 point of view, I would like to run through those
9 bullets and make a comment, and soften them
10 slightly.

11 That is, Mazi writes, must be statewide
12 system. Well, obviously it should be as statewide
13 as possible, but I'm perfectly comfortable with
14 the utility position that if they've already got a
15 communication system which is paid for, dependable
16 and two-way, obviously we're happy to see you use
17 that.

18 My personal remembrance of many
19 discussions of one-way versus two-way, which is
20 obviously a hot topic, is that in discussions in
21 my office everybody agreed that two-way is nicer,
22 cuter, more reliable, more comfortable. We didn't
23 want to be in the position of saying it's got to
24 be two-way, because that seemed a little bit
25 arbitrary.

1 Must be plug-and-play. Must hopefully
2 be plug-and-play. But, you know, we all recognize
3 that sometimes you need help. A new car is
4 supposed to be plug-and-play, too; but we're all
5 used to the fact that sometimes it has to go back
6 to the shop because some things don't work.

7 I don't know how you do that. I think
8 the aim is it should be plug-and-play 98 percent
9 of the time. But sometimes you're just not going
10 to receive the radio signal inside the home, and
11 you're going to have to have some way of getting
12 the signal outside the home relayed into the home
13 and so on.

14 And skipping all the way down to the
15 penultimate bullet which says, must meet Title 24
16 time tables. I think even that is somewhat
17 flexible. That is, I got up at the introduction
18 this morning and said there's a clock ticking and
19 we want you guys to go home and get to work.

20 On the other hand, we are perfectly used
21 to Title 24 to having more than one effective
22 date, depending on whether something is really
23 already market-ready or not. We tend to call this
24 tier one dates, tier two dates, tier three dates.

25 I can see you penciled out what a path

1 to market is, and it doesn't work for November,
2 October of '08 right now. I can also see that
3 things take longer, they don't pass some
4 specification up till six months before. We find
5 we have to delay somewhat.

6 We obviously don't make friends with
7 those people who are ready for market when we
8 delay for a minority who aren't ready. It's not
9 something that we like to plan on, but it's
10 something we do all the time.

11 So, I'm just trying to make the point
12 that we want to be realistic, and we do want you
13 guys to go home with the idea that there's a big
14 market out there, and let's see if we can
15 collaborate on specs. End of pep talk.

16 MR. SHIRAKH: If I can make one comment
17 about statewide versus the regionwide. I think
18 the two visions can actually be compatible. You
19 can have a thermostat that can work anywhere in
20 the state, and then also, you know, going back to
21 Carlos' vision of the expansion port. And that it
22 can come tailor-made for the specific AMI program
23 for a utility.

24 So, we can actually have both, in my
25 mind.

1 Any other questions or comments from the
2 audience. There's actually -- sir?

3 MR. TULLY: We have one on the phone,
4 online. Darryl Gagne, are you with us?

5 MR. GAGNE: Can you hear me?

6 MR. TULLY: Yeah, go ahead.

7 MR. GAGNE: Okay, yeah. My question was
8 about any certifications you require besides FCC
9 or UL, such as an EnergyStar compliant, when using
10 these devices in your deployed areas?

11 MR. TULLY: He asked are there any
12 certifications other than the obvious FCC or UL
13 the CEC or the utilities would require, such as an
14 EnergyStar compliant device in specifying the PCT
15 in the area deployed. And that's Darryl Gagne.

16 MR. GAGNE: Gagne.

17 MR. TULLY: Yeah, thank you. From AMDS
18 Wireless.

19 MR. EDGAR: This is Jeff Edgar with
20 White Rodgers. We would certainly be able to get
21 any certifications required, given the function of
22 the product. And if it was a wireless device or
23 FM device, it would certainly need FCC approval.

24 Beyond that I just don't feel prepared
25 to answer that.

1 MR. SHIRAKH: As far as the EnergyStar
2 label, that's really up to the Department of
3 Energy and EPA, whether they want to grant their
4 label to this PCT. They might, we don't know.

5 MR. GAGNE: So you all, you do not have
6 any, I guess right now, particular certifications
7 you're all looking for?

8 MR. EDGAR: Thermostats, in and of
9 themselves, are not considered a safety device in
10 the system. And therefore there are no
11 certification requirements that the industry sets
12 forth today.

13 MR. GAGNE: Okay, thank you.

14 MR. GUNTHER: Erich Gunther with
15 EnerNex. My question is really to the last bullet
16 on the slide, what also is needed to start the
17 process. And Art asked a really good question,
18 you know, in that regard this morning, you know.
19 What is necessary for everyone to get off the
20 dime.

21 And the responses that I heard come back
22 were related to, well, we can't do anything until
23 we have a specification.

24 But I've gotten the impression that it
25 is being asked of vendors, utilities and other

1 third parties, please propose a specification.

2 And I'd like to, you know, hear from Mazi, as
3 well, if I heard that right. What kind of input
4 is being asked at this point?

5 A strawman, an example was put on the
6 table by Ron at the previous workshop. A lot of
7 time has been spent, you know, trying to look at
8 that one specific thing. As Ron said, you know,
9 it's the WHAT that's important. And some
10 proposals are needed for the HOW.

11 And, you know, I'm curious as to what
12 the process is. And if, in fact, the CEC is
13 looking for the vendors to come to the table right
14 now, with some proposals; work with the CEC to
15 develop those proposals; work with the utilities.

16 I'm trying to understand that process
17 and how that would occur.

18 MR. SHIRAKH: The answer is yes. We
19 already saw a proposal from Honeywell. Basically
20 what they did was they took Ron's strawman
21 language and they marked it up. So that was a
22 step forward.

23 We've already heard utilities' vision.
24 And in my mind there's a lot of commonalities
25 between the two. There's a couple of differences

1 I'll point out which we need to work out.

2 It appears, at least the two
3 manufacturers who are present here, they pretty
4 much agree with what was proposed. So, you know,
5 that's the whole point of this, is to try to work
6 out through the differences and come up with a
7 language or set of proposals that, you know,
8 manufacturers can use and run with.

9 One of the differences that I heard
10 today that I'd like to bring that up, is the
11 utilities really have any depend on this expansion
12 port idea. The utilities have really depend on
13 the expansion port.

14 But we heard from White Rodgers that
15 that's one of the interfaces that they do not
16 necessarily agree with. So I'm wondering if there
17 is some way that the two visions can come together
18 to accommodate your concerns and the utilities.
19 Because from what I understand, they really want
20 that expansion port.

21 MR. EDGAR: I'll just hand the mike
22 right back.

23 (Laughter.)

24 MR. EDGAR: I guess the first question
25 is what is the key functionality that you need out

1 of that expansion port?

2 MR. HAIAD: Would be the ability to
3 communicate with our AMI infrastructure. And as
4 we, you know, in my case is different than PG&E's.
5 And there is a very good chance that will be
6 different than SDG&E.

7 Even though we agree on a bunch of
8 stuff, we don't agree on that, for sure. So that
9 is a way to customize what I was calling the
10 backbone, is the communication piece.

11 Now, your solution was, if I can
12 paraphrase that, just buy a different device, you
13 know, if you want to upgrade, there is Southern
14 California Edison thermostat, there is an SDG&E
15 thermostat, there is a PG&E thermostat and
16 everything is in that thermostat.

17 You go ask Home Depot if they want to
18 stock three different thermostats and be sold only
19 in PG&E versus Edison versus LADWP, you know, the
20 retail chain might not be too happy about that,
21 you know. I don't know. But it seems that you'd
22 end up with a huge amount of shelf space just to
23 accommodate this.

24 But I don't, you know, if we could have
25 a common thing that communicates with our

1 infrastructure, so be it. I don't know the
2 solution yet.

3 MR. VAHLSTROM: This is Tim Vahlstrom,
4 PG&E. I would just add one other twist on that.
5 I think the openness of the communication
6 capability in a thermostat is up to the point of
7 the primary communications link, not an additional
8 point, so that you can put a, you know, some sort
9 of a memory stick, or an outlet port or
10 communicate with three other things through the
11 thermostat.

12 That's -- I don't know exactly if we
13 would find that at all valuable. Because, again,
14 as SCE does, it communicates with end-use devices
15 out of the meter, not through the thermostat. So
16 if there's more communications that need to happen
17 internal to the home, there's probably already
18 other paths that have been established to do that.

19 So I guess we're not opposed to having,
20 you know, to the extent that meter manufacturers
21 do today, solid state meter manufacturers make
22 base metrology units with com ports built into
23 them. And theoretically they can plug any number
24 of AMI vendor technologies into their output
25 boards. They both have shared, via their own

1 agreements internally, what the protocols need to
2 be so that they can accomplish that.

3 I see this as very similar, where we're
4 trying to establish whether it's possible to have
5 a common backbone, as you called it, unit that has
6 an output, three-prong connector, or whatever it
7 is, that goes to a communications link. And if
8 you plug in brand A or brand B or brand C it goes
9 in the same com slot. But it doesn't talk to
10 anything else. And it doesn't have more output;
11 it doesn't have memory stick capabilities and lots
12 of other things.

13 MR. SHIRAKH: And again, that vision has
14 to be compatible with both PCT or Honeywell's
15 vision if you're using other points in the system.

16 Any other questions or comments from the
17 panel?

18 MR. MOHN: I just wanted to add one
19 thing to this. SDG&E doesn't really see the
20 additional value in a USB port or expansion port
21 at this point. Yet we know that from what Ron
22 said earlier this morning, nobody really
23 envisioned the value of a serial communication
24 card in pc's until the internet became so
25 prevalent.

1 So we wouldn't want to exclude it, but
2 we just don't see a business value for it today.

3 MR. SHIRAKH: Commissioner Rosenfeld.

4 COMMISSIONER ROSENFELD: I've been
5 trying not to take sides and to say that we're
6 very flexible, but just as a personal piece of
7 prejudice, I must say that the expansion port
8 seems pretty attractive to me, both at the
9 beginning and, because I listen to the utilities
10 saying that the munis might still want to be AM/FM
11 and Carlos wants his shiny two-way system, and
12 that's fine. But that seems to involve a port.

13 And at the other end surely the fact
14 that it's a CPP day or an emergency, that signal
15 wants to be relayed around the house or the
16 premises somehow, you know. The air conditioner's
17 a peak load; it's typically a few kilowatts. And
18 certainly you go for that first.

19 But there may be -- water heater, or
20 there may be a dryer, and there may be a pool
21 pump. And, of course, it's possible to have an
22 independent communication system which sends that
23 signal around the house. But I can't believe that
24 you want to rule out the possibility that the PCT
25 will have the ability to send power line carrier

1 around the house to those other devices.

2 So this is one place where you've got to
3 do a little convincing of me that a dollar's worth
4 of expansion port isn't a smart thing to do. I
5 don't know whether you want to make that remark
6 now, Honeywell or White Rodgers, but I am voicing
7 my prejudice here.

8 MR. MOHN: This is Terry with SDG&E.
9 I'll just make one point and then I'll turn it
10 over. We've seen that when televisions came out
11 they started giving us remote controls. Those
12 remote controls became more and more elaborate,
13 started controlling other devices, and now you
14 have the universal remote control. Seems to
15 communicate to a lot of your media within the
16 home.

17 And I really don't see that ubiquitous
18 communication in the home being driven out at the
19 utility. I think the consumer space is going to
20 be driving ubiquitous communications.

21 So, providing for communication link
22 coming from another source seems to be a
23 reasonable thing. But I really think that it
24 won't be coming out at the utility market.

25 MR. EDGAR: Jeff Edgar with White

1 Rodgers. I guess my response to the Commissioner
2 is simply that we certainly can design a product
3 any way which you see fit. And probably the best
4 way to answer this question is to really look into
5 it in more depth and give you an idea of what the
6 price difference is for us to design a product
7 with and without. And then you can make a
8 financial decision.

9 MR. SHIRAKH: Erich, go ahead.

10 MR. GUNTHER: This is Erich Gunther from
11 EnerNex again. Just want to ask a question
12 regarding this port and maybe use an example to
13 help frame it.

14 This expansion port seems -- I think
15 someone mentioned earlier, could be a wired port
16 like a USB port, but wireless would seem to be an
17 obvious alternative, as well, to provide that
18 expansion.

19 And as an example of that I recently
20 purchased a HomePro thermostat that uses a z-wave
21 communication interface. Now, it's not a standard
22 interface, but it does have a well-defined point
23 of interoperability and a published information
24 model, so that it works with my home automation
25 system.

1 And I was able to make a gateway to
2 interface it with my website. So, it seems like,
3 you know, if you have a device that can support a
4 well-defined point of interoperability, RF or
5 conducted, and an information model that the
6 industry can agree on so we know exactly what
7 commands we can give it as a minimum set of
8 commands, and that a minimum set of information
9 can come back, that, you know, seems to me could
10 go a long way towards supporting some of the
11 objectives I've heard here.

12 So when we talk about this expansion
13 port, it's something like the scenario I just
14 described as an even RF local expansion port. Is
15 that something that, you know, would meet
16 everyone's requirements here? Is that -- I just
17 wanted to get some kind of an example so I can
18 understand, you know, the framework that we're
19 talking about here.

20 MR. HAIAD: Carlos Haiad, Southern
21 California Edison. You actually asked a question
22 earlier about some timeline in getting the
23 requirements and the process. So, let me go there
24 to get to you where you are now.

25 The three of us here, the three IOUs,

1 are trying to get together, you know, a week, week
2 and a half, and start a process of defining the
3 requirements for this PCT under our best scenario
4 here, what we need it to do.

5 Once we get there, we would then expand
6 that or share the requirement with other utilities
7 within the state; that's the general vision. And
8 once we get some consensus in there, we would then
9 bring the vendors to give feedback and mold that
10 vision so, you know, you can envision anything,
11 and then they tell me, you can't build this. That
12 doesn't help.

13 So, on the process we'll bring the CEC
14 all the way along; we'll bring LBNL all the way
15 along to provide input.

16 So, once we know the requirements, then
17 we can decide if your solution would work with
18 what we have on the table at that time.

19 Now, we understand the timeline. We are
20 actually trying to work within the current Title
21 24 timeline; glad to hear that is multiple
22 implementation times. But, we are actually trying
23 to work with the current timeline. So the plan is
24 not to drag this forever.

25 MR. GUNTHER: Do those requirements

1 include an information model, is that what you
2 meant when you talk about the requirements? Does
3 that include the kinds of information you need
4 from it and you want to send, you know, control
5 signals you want to send to it?

6 MR. HAIAD: Yes. Yes. Again, we will
7 have to define those requirements, decide on them,
8 and you know, get feedback from the industry and
9 other stakeholders. And then the Honeywells and
10 White Rodgers can look at this and say, yeah, can
11 be built and here is the cost, and here is the
12 timeline to get there. That's the general idea.

13 MR. O'DONNELL: Yeah, I just want to
14 support that. I mean, the reason I proposed what
15 I did was to allow for that dialogue to take
16 place. What I have felt prior to putting our own
17 language up there was that we were beginning to
18 design something before we knew exactly what it
19 was supposed to do.

20 So, yes, I don't think you want me
21 deciding what this expansion port does. And I
22 don't know what to go build. So, what I need, as
23 a manufacturer is, don't tell me it's a USB port,
24 don't tell me it's wireless, tell me what -- what
25 are you trying to accomplish here. And tell me

1 what that requirement is. What is the need? What
2 are you trying to solve? And then let us come
3 back and tell you, well, you could do it wireless
4 or you could do it with a USB port, or you could
5 do it some other way.

6 And here's what it's going to cost. It
7 may be \$1 in parts, but it could be \$3 by the time
8 it gets on the shelf. It could take two years,
9 and I could come up with a nine-month alternative.

10 I want to be engaged in that
11 conversation, but I don't want to go design
12 something until I understand what the need is,
13 what's the basic need there. And then let me help
14 bring technology and solutions to accomplish that.

15 It could probably be done a hundred
16 different ways, and I don't want to presuppose
17 that it's done any one particular way. Which is
18 why what I'm proposing is let's leave it more open
19 to allow for various ways to accomplish that.

20 MR. SHIRAKH: So, Dan, you've heard what
21 Carlos had to say about what the expansion port
22 should be doing. Do you have enough information
23 to move on that? Or do you still need further
24 refinement or discussions?

25 MR. O'DONNELL: No, I think we need

1 further refinement. I would just need to
2 understand, literally, on a piece of paper, here's
3 what needs to accomplish. Here's the type of data
4 that's going to be coming through that expansion
5 port. Here's the speed at which it has to happen.
6 Here's future applications we see that may need to
7 do. Here's the physical size that it may need to
8 be. Here's a cost requirement we have.

9 Those types of things are what I'm
10 looking for, which I believe is what my language
11 allows for. But, again, as the manufacturer I
12 don't want to be the one to go decide what the
13 requirements --

14 MR. SHIRAKH: How do we get to that
15 point? Do you need further --

16 MR. O'DONNELL: I think what Carlos
17 suggested is --

18 MR. SHIRAKH: -- what Carlos --

19 MR. O'DONNELL: -- that the utilities
20 get together, talk about what those needs are,
21 reach agreement. Then come to the manufacturers.
22 And I agree with that approach.

23 COMMISSIONER ROSENFELD: Mazi. I just
24 want to ask Carlos actually, I'm trying to follow
25 up on this point. One of you, maybe it was Jeff,

1 said he didn't believe that the remote market, so
2 to speak, was going to get driven by electrical
3 savings, but by other customer needs.

4 But, I think it would be nice if your
5 utility panel actually provides the manufacturers
6 with some sort of economic idea of what we're
7 dealing with here. I still want to make the point
8 that there are a lot of swimming pools out there;
9 and it's easy for a pool pump to draw a kilowatt.
10 And one can visualize saving a half kilowatt. And
11 PCT, critical peak pricing is going to be like 100
12 hours a year, and that's 50 kilowatt hours a year.

13 And at 75 cents a kilowatt hour, that's
14 \$30 a year. And that's a pretty big market. And
15 that's only the pool pump.

16 And then there are other appliances. So
17 there is some driving out there. And it might
18 help you in your economic analysis if Carlos and
19 company give you some idea of what those drivers
20 actually are. I think they're not insignificant.

21 MR. HAIAD: I would agree with that.
22 They are not insignificant, yes.

23 MR. SHIRAKH: That lady's been waiting
24 patiently.

25 MS. SCHILBERG: Gayatri Schilberg from

1 JBS Energy for TURN. Hopefully in response to
2 this question we can hear from some other
3 utilities. I hope there are a few other utilities
4 on the phone, maybe SMUD or some others.

5 But anyway, this gets to the issue of
6 requirements and what this device is supposed to
7 do. We heard from Commissioner Rosenfeld that
8 this would essentially -- his vision is that it
9 would support a CPP program, which requires then
10 that it receive a signal the day ahead; remember
11 that signal for a whole 24 hours until the actual
12 incident happens. That's one set of requirements.

13 I would assume that this device should
14 also be capable of essentially implementing an AC
15 cycler program. I would hope that that's not
16 going to go by the wayside.

17 So, I would like some assurance that
18 when you're considering the requirements you're
19 looking at both an implementation of a CPP and
20 possibly an AC cycler program. And hopefully SMUD
21 and some others might comment on that, also.

22 MR. SHIRAKH: Carlos, you want to take
23 that?

24 MR. HAIAD: Sure. The answer is yes.
25 We would use that device. In this case we are

1 talking about a PCT. For a economic dispatch
2 scenario, as well as the reliability dispatch
3 scenario. The AC cycling, the way that Edison
4 uses for reliability.

5 So, yes, the answer is yes. We would
6 leverage that asset more than one way, not just
7 for critical peak pricing, which is driven by the
8 customer, really. Under the critical peak pricing
9 my vision would be the customer would have the
10 option to override. If he's willing to pay, you
11 know, the \$1, 75 cents, \$1.50, \$3, so be it.

12 So, I would envision that device to be
13 multiple, to be of multiple uses. So reliability
14 and economic dispatch from the utility side, and
15 critical peak pricing from the customer side.

16 MR. SHIRAKH: I don't believe we have
17 SMUD or LADWP on the phone, but I think we should
18 probably get some input from them at some point.
19 Although there's nothing to prevent them from
20 using the same infrastructure. With the air
21 conditioning cycling SMUD has a very active one.

22 Any other questions in the audience?

23 Sir.

24 DR. SUBRAHMANYAM: I guess this is a
25 quick question for Carlos. I just would like to -

1 - sorry, my name's Subrahmanyam with

2 CyberKnowledge and Berkeley wireless center.

3 Just to follow up on the point you'd
4 made about the distribution channel earlier, and I
5 guess it was that the core component would be
6 sold, say, by the Home Depot, everywhere else, at
7 all places.

8 And then you perhaps have this expansion
9 port which customize it to a utility region. That
10 was one of the hypothetical scenarios.

11 So the question I had was do you then
12 envision the specific, utility region-specific
13 modules being sold via Home Depot; or do you
14 expect the utility to perhaps provide that thing
15 that goes in it?

16 MR. HAIAD: There is two clear scenarios
17 here. One is if you have the backbone, which is
18 the thermostat, a fully operable thermostat, but
19 with not utility-specific communications
20 capabilities, if I can put it that way.

21 And the customer decides to participate
22 on a utility-specific program, I would envision,
23 and again there is a business case to be made,
24 dollars and cents, that the utility would mail the
25 customer that USB port, that thing. And they

1 would put on the thermostat and then they would
2 call me back and says, you know, I got it; I want
3 to sign up for the program.

4 And I can communicate with that device
5 and make sure the device is there, where it is,
6 how you, you know, it's working and that kind of
7 thing.

8 The risk of that is that, well, let's
9 say the customer doesn't want to participate in
10 any program whatsoever. Because participating in
11 the program implies customer choice. So how do
12 you assure that there is some communication to
13 that backbone for reliability, okay. Strictly
14 reliability.

15 On the case of new construction, to me
16 that's somewhat a nonissue. You can give those
17 things to the contractor, and he can have a bag
18 for SDG&E, a bag for Edison, a bag for PG&E, a bag
19 for SMUD, and he just dip into the bag and put the
20 device when he put the thermostat on the wall.
21 That's not too difficult.

22 If it is a retrofit you'd have to work
23 with the contractors; and they would also have
24 three bags or five bags or, as somebody pointed
25 out, there may be 50 utilities in California when

1 you add them all up. And he would put that in
2 there.

3 There would have to be some compensation
4 at some level to that contractor to put that
5 device in there. If the customer wants to
6 participate on the program, is no problem. It's a
7 push in there.

8 If the customer is in the CPP rate, he
9 may demand that from the contractor, because is a
10 way for him to save money.

11 But again, that is a type scenario which
12 is just economic dispatch from the utility's
13 perspective. And maybe the utility would have to
14 work with the contractors to make sure that when
15 you install this, or you retrofit this in my
16 service territory, and the code triggers the
17 replacement of the thermostat, that see is, in
18 fact, incorporate into it, what he puts on the
19 wall.

20 The fourth scenario would be yes, he
21 walk into Home Depot and he buys the thermostat.
22 And because you don't want the Home Depot to carry
23 multiple thermostats, again we would -- might have
24 to work with the retailer. And, you know, when
25 you go to the cashier and pay a little thing is

1 given to you. And the utility has funded that
2 thing, you know. It's still to be resolved.

3 MR. SHIRAKH: It seems like the choice
4 is either have thermostat that are in service
5 territory specific, which is going to, in my mind,
6 create burdens from -- on the manufacturers and
7 the retail channels, because they have to
8 manufacture and stock multiple thermostats.

9 Or have an expansion port that would
10 allow in each service territory to customize their
11 own program using that interface. And I think
12 that makes more sense.

13 Sir.

14 MR. KUHLMANN: Mike Kuhlmann, RCS. I
15 think there's a model that's being used today
16 that's similar. And that is if you go out and buy
17 a new tv set and you bring it home and you want to
18 have cable service. You've got to call them and
19 they'll come out and put a little card in your tv
20 set -- set top boxes anymore.

21 So, it's very similar. From your local
22 service provider you get the card and they put it
23 in and it works. So, I think that model's got
24 some demonstrated validity to it.

25 MR. SHIRAKH: That gentleman right

1 there.

2 MR. HUGHES: Yeah, Joe Hughes from EPRI.
3 In a prior life when I worked for a utility, we
4 were working on a common information, or common
5 language for inbuilt communications, and saw this
6 as a real valid way of integrating devices within
7 the building, itself. Be it BackNet for
8 commercial buildings or, at the time it was C-Bas-
9 Cal.

10 Do you see a rekindling, perhaps, of
11 this kind of infrastructure development as a part
12 of this? Because I'm seeing this, the scope of
13 the PCT now open up to become a consumer
14 communication interface device, basically. And
15 that would open the opportunity for being able to
16 get load control or diagnostics from any piece of
17 equipment within the home.

18 Let me just leave it there.

19 MR. HAIAD: Actually, you have addressed
20 some of that here in discussion. But some of the
21 work that we are doing, you mentioned the
22 interface. With this new meter there is some
23 discussions that the meter might have a remote
24 display panel inside the home.

25 So, right now I really don't know

1 exactly what might happen. I mean if you can
2 envision that you would provide information about,
3 in real time, information about usage in your home
4 that is coming from the meter to a remote display
5 that is in your living room.

6 So, anyway, it goes back to the point
7 that is, in fact, the PCT your gateway if you go
8 beyond the air conditioning, you know.

9 The reason that we are sort of
10 struggling with this is, in my case, in Edison's
11 case, our AMI specification is not today right
12 now, you know, 1:00 or 4:00 this afternoon, is not
13 ready for prime time. Otherwise I could have told
14 the vendors, here is what you need to communicate
15 to.

16 So, I don't know. I don't know if we
17 want to have some common communication to other
18 devices within the home, or we just let them be
19 whatever they might be as long as they can
20 interface with that gateway, be it the meter, be
21 it the thermostat. I don't have an answer for you
22 at this point.

23 MR. MOHN: I talk to Joe pretty often.
24 This is Terry with SDG&E. And I think I
25 understand what you're getting at, you know. If

1 we can create requirements that define
2 communication protocol between devices that
3 complies with some standards-based paradigm
4 perhaps already established, then we wouldn't have
5 to go and reinvent all of this. We'd just take
6 advantage and leverage what's there.

7 Ideally, that would be our best
8 position. We still haven't completed the
9 requirement-gathering phase just for what we want
10 to do at a business sense for each utility.

11 But I think that if we establish that
12 our requirements are very similar and that one day
13 in the future we envision having a PCT or
14 communication module that the HVAC communicate
15 with other devices, ideally we'd want that
16 communication to follow some established protocol.
17 That would be a good place to be.

18 I don't know that we're ready to say
19 that's the case yet.

20 MR. SHIRAKH: Ron.

21 MR. HOFMANN: This is a somewhat
22 difficult question to ask because the speakers
23 pretty much know what I'm referring to, and the
24 rest of the audience doesn't. But maybe by them
25 answering the question we're about to ask, it

1 might sort of fill itself out and I won't have to
2 read this.

3 In inviting the speakers to this
4 workshop I sent out a detailed email in which
5 there were the four interfaces, in which I talked
6 about the WHAT and not the HOW.

7 And there were examples of the kinds of
8 things that you might consider. I guess my
9 question is, is this format a way that you could
10 list, in a series of bullets, let's say for the
11 expansion port, what all the applications might
12 be.

13 So I listed in this thing to you all, I
14 listed three possible uses for the expansion port.
15 And, of course, I could think of 20, but I listed
16 three. One was a physical audit capability; one
17 was a connection for local lans, local area
18 networks for sensors or whatever you want, for in-
19 the-house stuff. And one for wide area network
20 support for aggregation services.

21 Don't focus on those three so much, but
22 I'm asking you is this format that I presented to
23 you in that email something that you could, when
24 you all get together within the next couple of
25 weeks, you could come back with a list of what the

1 value or nonvalues are in each of these
2 categories.

3 So that if you had the audit capability
4 you might all agree that that's a silly one and
5 you'd throw that one away, and it's not worth
6 doing. On the other hand, you might want an
7 expansion port for the local area network.

8 The question is do you see any value in
9 this kind of an expose of the specifications for
10 these four interfaces.

11 MR. MOHN: We don't want to reinvent
12 work that's already been done. And a lot of work
13 has been done to provide that for us. Absolutely
14 we'll use that to draw from.

15 What we need to do is establish the
16 value of each of those, I think, is what you're
17 trying to say, within our own business territory.
18 But that's definitely good work that we'll take
19 advantage of.

20 MR. HOFMANN: One other different
21 question. This is a question that I don't think
22 that the Commission could help you with. It was
23 thrown out there for everybody to think about.
24 And that was the HVAC equipment interface.

25 And the way it was presented was that it

1 may not have to be one interface for everything,
2 but maybe for 90 or 95 percent of all the
3 equipment that's out there.

4 Have you all -- nobody's really
5 discussed it in this workshop in any great way, so
6 maybe you agree with it, or you disagree with it,
7 I'm not quite sure, but do you see an advantage to
8 having a simple connector or plug so that you can
9 exchange your PCTs over time.

10 So if I buy an early White Rodgers
11 thermostat and -- PCT, and like it for awhile.
12 And then all of a sudden a new program comes along
13 and I see that I can take advantage of it with the
14 Honeywell PCT, and instead of having to bring
15 somebody in to wire the terminal strip again, that
16 I can just unplug it and go down and buy another
17 one and put another in. Is that of any interest
18 to anybody? Is that something that the industry
19 wants? Is it something that you can all get
20 together on and agree on, on what that connector
21 is?

22 MR. SHIRAKH: I have one concern about
23 that. If that interface precludes heat pumps or
24 commercial package units. It has to be an
25 interface that accommodates a broad range of

1 equipment.

2 So, now, go ahead and answer.

3 MR. EDGAR: Jeff Edgar with White
4 Rodgers. From a White Rodgers' perspective we're
5 totally comfortable with that, if that's what
6 everyone decides that they want.

7 We had a very in-depth discussion, of
8 course, before I came here. As a White Rodgers
9 team, that's where we see the value in Home Depot
10 and Lowe's in the retail channel. We're very
11 cautious and we'd just like to state our opinion
12 that we don't feel this is the type of product
13 that's well suited for a homeowner to buy at
14 Lowe's and then put in, themselves.

15 But, to upgrade it at a later time, it's
16 very feasible. Particularly if you have a device
17 like you're talking about.

18 MR. SHERMAN: This is Craig Sherman at
19 SMUD. Can everybody hear me?

20 MR. SHIRAKH: Yes, we can, please go
21 ahead.

22 MR. SHERMAN: Okay. We did pilot a
23 program here several years back using
24 communication equipment, and was using a Converse
25 Honeywell system.

1 One of the things we found out from it
2 was that (inaudible) area are built to the zoned
3 air conditioning system. And that, as a result,
4 you know, typically you only put on the
5 communicating thermostat -- with the downstairs
6 thermostat. We left the one upstairs alone
7 because of the equipment incompatibility.

8 So the expansion port, it sounds -- to
9 me, where that's maybe another thing we can tie
10 into, is that other upstairs thermostat into the
11 system, as well.

12 MR. SHIRAKH: You're fading away; we
13 can't hear you anymore.

14 MR. SHERMAN: That was the end; I ended
15 my conversation.

16 My only thing was making sure that, you
17 know, we address zoned air conditioning systems.
18 You know, a lot of the new homes built in the
19 Sacramento area are zoned air conditioned systems,
20 where maybe a thermostat upstairs is just
21 controlling a damper or something like that.

22 So, let's look at the whole system, I
23 guess, when we look at the thermostats.

24 MR. O'DONNELL: Ron, just a quick
25 comment on the HVAC interface. I suppose my view

1 on that is it's nice to have, but I just don't
2 know that in the short term if we really could
3 reach a consensus, not just between Honeywell and
4 White Rodgers, but in all the manufacturers that
5 could be impacted by that, or what that standard
6 interface would be. What would make the most
7 sense.

8 I know what you're getting at; I mean,
9 like the telephone industry used to be hardwired.
10 Then it went to four-prong. Then it went to the
11 modular jack. I certainly see the value in that.
12 I wouldn't want that to hold us up in the short
13 term.

14 We've got a short timeframe, as it is,
15 and it'd be nice to have. I don't know if it's
16 necessary for the success of the program.

17 COMMISSIONER ROSENFELD: I think that
18 I'm not convinced by that argument. I mean I can
19 see that you guys can argue about it for a day.
20 But you're really only sort of discussing is it
21 going to be an RJ-47 or is it going to be
22 something I don't know about.

23 And we build 200,000 new units a year.
24 And the idea that you put them in with old
25 fashioned terminal strips when there are RJ-47

1 connectors just seems sort of appalling to me. I
2 think we ought to strive to be able to plug it in.

3 MR. SHIRAKH: My only concern is that
4 interface would be robust enough to accommodate
5 not just the AC unit, but heat pumps and
6 commercial unitary systems.

7 COMMISSIONER ROSENFELD: But, Mazi,
8 something like an RJ-47 connector could do that,
9 right?

10 MR. SHIRAKH: I don't know. I heard
11 that they may or may not be able to.

12 MR. HAIAD: I'm not a manufacturer. And
13 I see one with a microphone. But I think the
14 issue maybe Ron is going to address is that you
15 may have a system that is four-wire, five-wire,
16 eight-wire, 14-wire, 18-wire, and I'm not sure if
17 you have, you know, this is for you guys to solve,
18 if you have one that is a 20-wire and will work
19 just fine with one that is a four-wire. I think
20 that's the issue really.

21 And how when you plug it in it can
22 recognize, well, I really don't have any wires
23 here. It's not that I don't have the
24 communication, it's broken because the wire broke
25 back in there. You know, I don't know enough

1 about this.

2 MR. SHIRAKH: That gentleman.

3 MR. BACCEI: I'm Bruce Baccei with
4 ConSol. We are one of the Building America teams.
5 And I just wanted to mention that we're working
6 with both SMUD and Roseville Electric on two near
7 zero energy home projects where we're going to be
8 testing the idea of you get feedback from
9 something like the TED thing, the detective thing
10 where it gets feedback. We're going to test to
11 see if that really, if it makes any difference.
12 So we'll let you know if that works. Thanks.

13 MR. SHIRAKH: Thank you. On the
14 interface, I think Carlos was describing perhaps a
15 jack that accommodated up to 20 wires. But if you
16 only could use four wires, that's all you need to
17 do. Is that something that's plausible?

18 MR. EIGENBROD: This is Ron from
19 LightStat. One other issue with a modular type
20 jack is that that's typically a very small wire
21 that's like a 22 gauge. And there is a voltage
22 drop, you know, situation that you can run into.
23 Most home or air conditioning systems use 18
24 gauge. And they do that because the diameter of
25 the wire is necessary to carry the current. And

1 typically the transformers in the equipment are
2 rather small.

3 And we're probably looking at more
4 current, more power to the thermostat with a PCT
5 than maybe, you know, another design.

6 So that's something that you'd really
7 have to model and work out. And I would really
8 echo Dan's comment that I think it's a nice thing
9 to have, and this may be a future goal, but it
10 also involves not just the thermostat
11 manufacturers, it certainly involves the other end
12 of the cable, which is what it's going to plug
13 into in the outside or in the room or in the
14 basement.

15 And the manufacturers today do not have
16 a common wiring setup. There's RGYW and there's
17 1234, and there's 24-volt AC and 10-volt DC. So,
18 it's really a big issue. And I think it would
19 really slow things down. And maybe it's something
20 for the future.

21 MR. SHERMAN: I'd also like to
22 reiterate, this is Craig Sherman from SMUD, we did
23 experience those same issues when we were
24 installing the communicating thermostat on our
25 program.

1 Of course, not only were we controlling
2 an HVAC, but also pool pumps and water heaters.
3 And we did have to install I guess it what was a
4 transformer in the air handler to step up the
5 voltage in order to get it communicating with the
6 rest of the equipment in the home.

7 So, I mean it was a little bit of a
8 barrier for installation, but we were able to work
9 through it.

10 MR. EDGAR: I'd just like to make a
11 comment, make sure that I understand correctly
12 what this -- jack type interface was designed for.
13 As I understand this design, to be the connector
14 from the thermostat to the sub-base of the
15 thermostat. And not from the thermostat to the
16 furnace, or the thermostat to anything else. It's
17 strictly thermostat to sub-base so that when the
18 homeowner goes and wants to upgrade, they then can
19 buy one, and the wiring from the thermostat to the
20 furnace or the air conditioner or whatever,
21 remains. And they just simply plug this jack in.

22 MR. SHIRAKH: I think that is correct.
23 Is that correct, Ron?

24 MR. HAIAD: Well, you would then hope
25 that the sub-base from your company would be the

1 same size and shape and format as his company,
2 otherwise I would have to always buy White
3 Rodgers, even though I can buy better and better
4 and better, I would still be with you. So, --

5 UNIDENTIFIED SPEAKER: (inaudible).

6 MR. HAIAD: Yeah, so to me the bigger
7 picture would be the fact the wire that is coming
8 all the way from the air conditioning unit, it's
9 in a cable similar to the phone jack, whatever it
10 is, that you would plug a thermostat to it,
11 instead of being just 4, 8 or 18 wires.

12 And that's the ideal scenario that
13 might, in fact, be, you know, too soon to resolve
14 it or not.

15 MR. HOFMANN: I thought Dan described it
16 best just a moment ago. And so I may have jumped
17 too soon when I said it was the sub-base. I think
18 we just have a terminology problem. I think your
19 concept is actually right.

20 What would have to happen is it would
21 have to be what I would call a standard sub-base,
22 which belonged to no manufacturer. And that would
23 be in everybody's wall. Then the baseplate, or
24 whatever the manufacturer came with, would plug
25 into that. There might be an internal connector

1 between that baseplate and the actual thermostat
2 in addition. I don't care about that connector,
3 that could be proprietary.

4 But it would mean that in my house, as a
5 user, I could move from vendor to vendor, or from
6 vendor's low product line to a higher product line
7 without having to bring in extra services on the
8 outside, and get more functionality from something
9 I bought.

10 So I don't know what the terminology is,
11 but I thought you said it right.

12 COMMISSIONER ROSENFELD: Carlos, -- this
13 is Art again. I think an example of what you're
14 saying, and it's very constructive, is just the
15 phone which Bell Telephone Company used to own on
16 my kitchen wall. And now I can go out and I can
17 buy from Radio Shack any brand of telephone. And
18 darn it, it works. There's a little pig-tail, and
19 there's an RJ-11 connector. Seems to work fine.

20 MR. HAIAD: Yes, but somebody had to
21 combine all those old wires into something that
22 you can go to Radio Shack and buy the plug to.
23 Which is Ron's point, that a sub-base, it's
24 common. And then every -- which is not trivial,
25 since the shape of thermostats are not common.

1 But anybody could put their own brand against
2 that.

3 In new construction that might be a
4 possibility, although I don't know if the vendors
5 want to have everything the same form or shape.
6 But in retrofit somebody would have to replace the
7 old with the new for sure.

8 COMMISSIONER ROSENFELD: I think -- I'd
9 just say that at least for 200,000 new houses a
10 year, darn it, that much of getting our act
11 together we should be able to accomplish. If the
12 phone folk can do it, we should be able to do it.

13 MR. HAIAD: Sure.

14 MR. O'DONNELL: That's the perfect
15 analogy. You're absolutely right. The reason
16 that was able to be accomplished is that there was
17 a monopoly --

18 COMMISSIONER ROSENFELD: Yeah.

19 MR. O'DONNELL: -- that went off and
20 developed that. We've got I don't know how many,
21 20 different manufacturers of thermostats working
22 with customers that there is no standards body in
23 our unglamorous industry. So I don't know what
24 the forum is to come together and agree on exactly
25 what that is.

1 We can sit down with each other and
2 decide what it is, but there's a lot of other
3 manufacturers out there, and they're going to have
4 a lot of opinions. And I think it's a very valid
5 point that it's got to work with many different
6 types of systems.

7 So I don't know that we could just sit
8 here and say, well, if the two of us decide what
9 it is, everyone else will follow. I can promise
10 you in my industry that's not the case.

11 So, I just want to -- I understand, I
12 agree, I'd love to get there. It would make
13 manufacturing for me much easier. I'd love to
14 have some sort of common wallplate. It's been on
15 the design table at Honeywell for quite some
16 period of time.

17 I don't know if we're going to be able
18 to accomplish that in the timeframe we're trying
19 to work in, which is why I hold the position it's
20 nice to have, I don't know if it's required for
21 the success.

22 MR. SHIRAKH: From the Title 24
23 perspective that's probably the interface that is
24 least relevant. I think it's highly desirable
25 from a consumer -- I tell you from my own

1 experience I try to replace my thermostat and I
2 mis-wired the power and I blew my thermostats.
3 Cost me 150 bucks. I'd like to avoid that in the
4 future, if I can.

5 (Laughter.)

6 MR. SHIRAKH: So it's highly desirable
7 to have that. It would be good to have it as part
8 of this proceedings. But the other three
9 interfaces, to me, are far more important.

10 Any other -- the gentleman there.

11 MR. HUGHES: Yeah, Joe Hughes with EPRI,
12 again. I'm going to take you back up to the top
13 of the language -- to the stop of the stack and
14 get away from the hardware for a minute.

15 Ten years ago or so when we were working
16 on the Cal language for CEBUS, we had an HVAC
17 manufacturer, prominent one, tell us gee, if it's
18 energy management you want, don't monkey with the
19 thermostat; provide a way of providing a load
20 reduction signal to our unit and trust us with our
21 designs. We have the ability of doing things with
22 unit parameters to reduce energy use and not
23 compromise comfort that much.

24 They were basically saying that the
25 thermostat setting is a comfort setting, and not

1 necessarily an energy management setting.

2 I just provide this observation that
3 there is that other dimension that manufacturers
4 of equipment have those options, design options,
5 they could exercise.

6 So that in our thinking with this -- and
7 those objects are available. The Cal language, as
8 I understand, is still available. And basically
9 there's a load reduction signal that you could
10 exchange metadata and it expresses a percentage of
11 load reduction that the unit could provide.

12 It's just another dimension of design
13 and how it would be good to leave those designs,
14 as much as possible, to the industry.

15 MR. HAIAD: A comment that I think
16 Mazi's better positioned to address is that the
17 CEC, what you are proposing is a functionality now
18 at the unit. And the CEC has not a great deal of
19 latitude to mandate anything at the unit level.

20 So, it's, okay, that's their problem. I
21 mean they can't tell the air condition
22 manufacturer you shall do this. There is some
23 preemption issues that they, you know, apparently
24 is not as simple.

25 Although the thermostat, however, is in

1 the house, is in the wall of the house. And that
2 seems to give them a great deal of latitude to
3 mandate whatever they want.

4 So that's the balance that I think they
5 try to stay away from the unit, itself. Mazi.

6 MR. SHIRAKH: Most air conditioning
7 components are governed by EPAC, the federal
8 standards. And we may run into preemption issues,
9 as Carlos has pointed out.

10 We do have latitude with thermostats.
11 What we can do is, and there's many ways we can
12 write the standards language, is to actually have
13 the standards language, the main language will be
14 based on PCTs. But we can have other systems that
15 will accomplish the same thing. And that might be
16 something we'd like to contemplate.

17 In fact, that's my preferred approach,
18 is basically would accomplish what Honeywell is
19 recommending in a slightly different way, where
20 the main requirement will be based on a PCT. And
21 then what you would allow for systems that would
22 accomplish the same thing.

23 And so we have to work on that language
24 as we move forward in the next couple of days.

25 Any other questions? We're kind of

1 coming up to 4:00. We need to wrap it up. Any
2 other burning issues or comments? Jon McHugh, you
3 need to get a mike.

4 MR. MCHUGH: This is a question about
5 timeline. In terms of the timeline, when do the -
6 - this is focused towards the utilities -- when
7 are your plans for rolling out AMI for all the new
8 meters that are going to be installed in new
9 homes? Is there a plan filed with the CPUC
10 indicating a rollout for AMI meters on new homes?

11 MR. VAHLSTROM: Well, since we're going
12 to hearings in two weeks or less, our position is
13 pretty clear. Our deployment plan, if approved by
14 the Commission in its present state, would begin
15 deployment at the end of this year and complete in
16 2011. With, I believe, the current viewpoint is
17 that new construction would be covered where
18 feasible and appropriate, I guess.

19 There are some limitations for all new
20 construction. It says we're covering gas, too,
21 which operate on batteries. You may not want to
22 have it five years ahead of its network, you know,
23 just because it's in place. It may not be good to
24 asset management.

25 But, yeah, I think the plan would be is

1 that new construction would be handled as it
2 occurred, with the right technology. And as the
3 network caught up there would not be a meter
4 change required.

5 MR. MCHUGH: And so the new homes would
6 be more likely on the front end of the 2006 to
7 2011, is that correct?

8 MR. VAHLSTROM: To be clear, the meters
9 would be in, but the network would be deployed
10 over a five-year period. And so the enablement of
11 those meters, the realization of benefits from
12 those meters would not occur until the network
13 caught up to where the new business had happened
14 anywhere in the utility service territory.

15 So, yeah, there is a five-year
16 deployment. And actually the realization of
17 benefits would track the deployment schedule, even
18 though meters had been installed earlier because
19 we were there before to get them in place. But
20 the benefits would not occur until the networks
21 went in place.

22 MR. MCHUGH: Thanks.

23 MR. SHIRAKH: To summarize, we heard a
24 vision from the manufacturers about what the
25 system should look like. We also, this afternoon,

1 heard a vision from the utilities. And I actually
2 think we're a lot closer than I had envisioned
3 before this workshop. Some differences would
4 remain.

5 The timeline is, as I mentioned this
6 morning, we're going to have our last staff
7 workshops are going to be in early May of 2006.
8 We probably need something about three weeks
9 before that, like mid April.

10 So I'd like to ask Ron or somebody here
11 to recommend what it is that we need to do in
12 order to keep the process moving, keep the
13 dialogue going, resolving the remaining issues,
14 and coming up with a workable standards language
15 by mid April.

16 MR. HOFMANN: You're asking for a
17 comment right now?

18 (Laughter.)

19 MR. SHIRAKH: Well, basically I'm asking
20 for next steps. What is it that we need to do?

21 MR. HOFMANN: Well, I think the next
22 steps were stated by the IOUs already, which is
23 that they're getting together before the end of
24 the month to at least work out a plan as to where
25 they're going and when they're going to have their

1 requirements.

2 You're not going to have your
3 requirements by the end of the month, but you're
4 going to have your plan to get your requirements
5 by the end of the month.

6 I think that's the next step. Would you
7 agree or disagree?

8 MR. HAIAD: I agree; that's the plan, in
9 fact. And as we move along in developing the
10 requirements, we would bring more and more, you
11 know, from the three IOUs to the munis to the
12 vendors, into the process, so -- and keeping in
13 mind the overall current timeline I can pretty
14 much guarantee that I don't think we will have
15 those requirements with the input from the vendors
16 by mid April. That's not -- you know, because my
17 requirements for AMI won't be completed by then.

18 MR. SHIRAKH: Well, we'll have
19 opportunities after that. At least I'd like to
20 have a working proposal for the May workshop. And
21 if you need to refine it at a later date, that's
22 probably fine. I just want to make sure the
23 process keeps moving, the dialogue continues
24 between you folks and the PIER and the Title 24
25 Staff.

1 Unless there is any other comments I'm
2 going to close my session and turn it over to Mark
3 Rawson for some closing comments. Thanks.

4 MR. RAWSON: I'll keep this short and
5 sweet. It's been a long day. Thank you all for
6 coming. We do ask that if anybody had any written
7 comments that they wanted to submit, we're very
8 open to taking written comments, as well.

9 Unfortunately I did not put my email
10 address on the workshop notice. But Tony Tully's
11 email address is on the bottom of the workshop
12 notice, so if you could please direct any written
13 comments to Tony, and we'll make sure that they
14 get to the Title 24 folks and the Title 24 docket.

15 So, I want to thank our panel for taking
16 all these questions today and persevering
17 throughout the day. So, thank you very much.

18 And we'll adjourn.

19 (Whereupon, at 4:01 p.m., the workshop
20 was adjourned.)

21 --o0o--

CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter,
do hereby certify that I am a disinterested person
herein; that I recorded the foregoing California
Energy Commission Workshop; that it was thereafter
transcribed into typewriting.

I further certify that I am not of
counsel or attorney for any of the parties to said
workshop, nor in any way interested in outcome of
said workshop.

IN WITNESS WHEREOF, I have hereunto set
my hand this 28th day of February, 2006.

PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345